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Emerson	650D, 654D, 655D (Ch. 120123B) Tel. Rec. Prod. Chg. Bul. 48	182-1
Emerson	661B, 667B, 668B, 674B (Ch. 120134B, G, H) Tel. Rec. Prod. Chg. Bul. 48	182-1
Emerson	676D (Ch. 120144B, G, H) Tel. Rec. Prod. Chg. Bul. 48	182-1
Emerson	677B, 678B (Ch. 120134B, G, H) Tel. Rec. Prod. Chg. Bul. 48	182-1
Emerson	680D, 681D, 686B, 687B, 696B (Ch. 120144B, G, H) Tel. Rec. Prod. Chg. Bul. 48	182-1
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SUPPLEMENTAL DATA TO FOLDER 3 IN SET #109

EMERSON MODELS 650D, 654D, 655D (Ch. 120123B)

Code Triangle 1

Emerson Models 650D,654D and 655D using Ch. 120123B with Code Triangle 1 have the following Changes:

R54 (470KΩ) plate load resistor of the 6S8GT is disconnected from 115 volts B± point and connected to the 250 volt B± line.

Code Triangle 2

Ch. 120123B coded triangle 2 the following changes were made to reduce the amount of stray audio pickup.

A .1MF 200 V. capacitor is connected between the junction of R76 and center top of R4 (vertical linearity) and B-.

A .25MF 400V capacitor was added from B- to chassis.

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 4 IN SET #137

EMERSON MODELS 648B, 661B, 667B 668B, 674B, 677B, 678B, (Ch.120134B, G, H)

Ch.120134B, Code Triangle "B" Ch. 120134G, H Code Triangle "A"

Emerson Models 661B, 667B, 668B, 674B, 677B, 678B, 648B using Ch. 120134B, G, H have changes listed below:

Chassis 120134B is coded Triangle "B" and 120134G, H is coded Triangle "A".

R73 was removed and replaced by a 4700Ω ½ watt resistor and a 2200Ω ½ watt resistor connected in series. The 4700Ω resistor is connected to Pin # 6 of V15.

Capacitor C74 is removed from Pin #6 of V15 and reconnected to the junction of the 4700Ω and 2200Ω resistors.

R77 was changed to 1000 ohms.

Ch. 120134B Code Triangle "C" Ch. 120134G, H Code Triangle "B"

Chassis 120134B code Triangle "C" and 120134G, H code Triangle "B" have the following changes:

R79 was changed to 330Ω.
R77 was changed to 1500Ω (Original Value)

SUPPLEMENTAL DATA TO FOLDER 4 IN SET #138

EMERSON MODELS 676D, 680D, 681D 686B, 687B, 696B (Ch.120144B, G, H)

Code Triangle "A"

Emerson Models 676D, 680B, 681D, 686B, 687B, 696B using Chassis 120144B, G, H, coded triangle "A" incorporated changes to improve sync stability.

R69 was removed and replaced by a 4700Ω ½ watt resistor and a 2200Ω ½ watt resistor connected in series. The 4700Ω resistor was connected to Pin #6 of V14.

Capacitor C64 is removed from Pin #6 of V14 and reconnected to the junction of the 4700Ω resistor and the 2200Ω resistor.

R74 was changed to 1000 ohms.

Code Triangle "B"

Chassis coded triangle "B" incorporated the following changes:

R76 was changed to 330Ω ½ watt.
R74 was changed to 1500Ω (Original Value).

Code Triangle "C"

Chassis coded triangle "C" incorporated the following changes to reduce excessive vertical size.

R89 was changed to 150KΩ ½ watt.
R90 was changed to 220KΩ ½ watt.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

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Code C10, C11, B10, B11, B12, B13 (Ch.1-139)

Code C10, C11, C12, C13, B10, B11, B12, B13 (Ch. 1-186)

Sylvania Models 1-075, 1-113, 1-114, 1-125, 1-210 using Ch. 1-139 coded C10, C11, B10, B11, B12 and B13, also Model 1-177 using Ch. 1-186 coded C10, C11, C12, C13, B10, B11, B12 and B13 have the following changes.

A 120Ω resistor was connected between the cathode of the sound limiter V12 Pin #7 and ground.

R57 was changed to 15K.

R58 was changed to 68K.

A .005MF capacitor was connected to high side of R38 to ground.

R48 was changed to 27K.

C47 was changed to 47MMF .

R32 was changed to 47K.

C42 was changed to 8MMF.

R34 was changed to 3.3K.

A 1000Ω resistor was added between Pin #2 of the AGC Clamper tube (V8) (6AL5) and the AGC Line to tuner.

A .005MF capacitor was connected between Pin #2 of V8 (6AL5) and ground.

R22 was changed to 6.8Meg.

A .005MF capacitor was connected between the junction of R22, R23 and ground.

A 1/4 amp. fuse was added to the + 180 volt line.

A 1/4 Amp. fuse was added between L1 and C1A.

A 3.2 amp. fuse was added to the primary side of the power transformer (T1).

A 20 amp. fuse was added to protect all tube heater except V10, V11, V12, V13 and V14 .

A 1/4 amp. fuse was connected between L2 and junction of M1 and M2. A wire was added to feed -130 V. through a 10K resistor to R111. R111 was changed to 470K. R111 was disconnected from the cathode of V22 (Pin #3) and a 10MFD capacitor is connected between R111 and Pin # 3 of V22.

C98 was removed from circuit.

Horizontal Center Control R6 was changed to Part #153-3002.

Fuse M4 is not in circuit.

C90 was removed from +170 Volts and connected to ground.

R86 was changed to 4.7K.

R74 was changed to 33K.

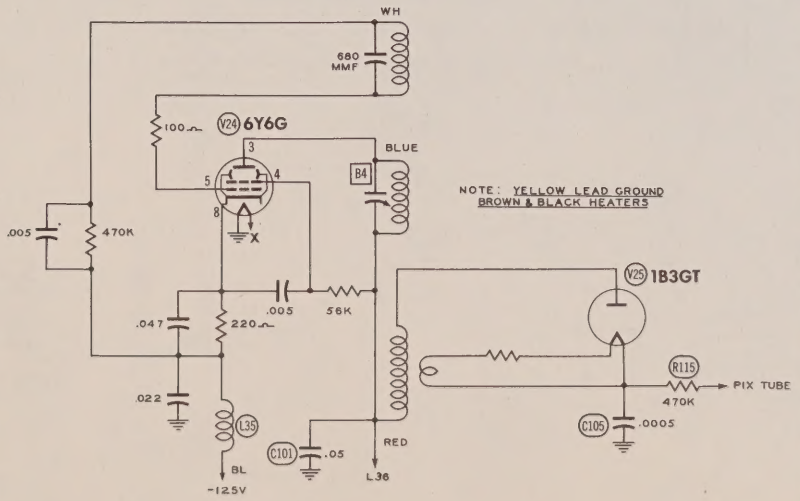
R92 was changed to 1.5Meg. A 680K resistor was connected between Pin #8 of V16 (12AX7) and R92.

R49 was removed from circuit.

Pin #7 of V10A is connected to junction of R92 and new 680K resistor.

Pin #5 of V8 is removed from ground, also, Pin #8 of V10 is removed from ground. A 4.7K resistor is connected between Pin #5 of V8 and Pin#8 of V10. A 68Ω resistor is connected between Pin #5 of V8 and ground. A 8.2K resistor is connected between Pin #8 of V10 and -125 V.

A new horizontal osc. circuit was incorporated. Partial schematic is shown below:



(Cont. on reverse side)

Ch. 1-139
Coded C12, C13, C14, C15, C16, C17, C18, B14, B15, B16, B17, B18.

Ch. 1-186
Coded C14, C15, C16, C17, C18, B14, B15, and B16, B16, B17, B18.

Sylvania models 1-075, 1-113, 1-113, 1-114, 1-125, 1-210 using chassis 1-39 coded C12, C13, C14, C15, C16, C17, C18, B14, B15, B16, B17, and B18; also model 1-177 using chassis 1-86 coded C14, C15, C16, C17, C18, B14, B15, and B16, B16, B17 and B18 have the following changes made.

C36 was changed to 1.5MMF.

R32 was removed and C42 was changed t o 4.7MMF.

R33 was changed to 12K

L22 and C46 was removed from pin #5 of V6 (3rd. Video IF) and reconnected to pin #1 of V6. C46 was changed to 10MMF and a 47K resistor was added in parallel with L22 and C46.

Pin #2 of V6 was removed from ground and connected to pin #7 of V6.

R36 was changed to 33K.

The cathode circuit of the 4th Video IF stage (V7) has been changed. A IF Trap was added between the cathode resistor (R37) and ground. The IF Trap (Part #118-0005) is paralleled with a .0005MFD ceramic capacitor. C48A was removed from R37 and connected to ground. C48A and C48B is changed to .005MFD ceramic capacitors.

R39 was changed to 4.7K.

A Video Peaking coil (Part #146-0001) replaced the 4.5MC sound trap (R44, C55, and paralleled coil).

All fuses except the heater and T1 fuse was changed to 3/10 Amp.

A A.G.C. Treshold control was added between the 4.7K resistor connected to pin #8 of V10 and pin #5 of V8 (A.G.C. line clamper tube).

R92 was changed to 680K and the 680K resistor between R92 and Pin #8 of V16 was changed to 470K.

R102 was changed to 2.2K.

R75 was changed to 68K.

C75 was changed to 500MMF.

R76 was changed to 220K.

R77 was changed to 560K.

C94 was removed from ground and connected to junction of R104 and L33.

R106 was changed to 27K.

A new horizontal output tube (6BQ6GT) was used. A partial schematic is shown below. (Fig. 1)

Sylvania models 1-075 , 1-113, 1-114, 1-124, 1-125, 1-97, 1-210 , 1-245, 1-246 using chassis 1-139 and model 1-117 using chassis 1-186 coded C19, C20, C21, C22, C23, B19, B20 have the following changes.

Code C19 — B+ fuse change to 3/8 Amp. and B-. fuse change to 1/2 Amp.

C20 — Chassis uses a B19 or higher bridge.

C21 — R92 was changed to 750K.

C22 — C79 was removed from ground and connected to pin #3 of V10. (Vert. Osc.) . An additional .00025 MFD 1000V capacitor was connected between the plate (Pin #5) fof the vertical output tube (V18) and grid (Pin #1) of V18.

C23 — B+ fuse was changed to 1/4Amp slow blow type.

B19 — A 100Ω resistor was added between the screen grid Pin #4 of V22 (6BQ6GT) and the junction of a 10K screen droppong resistor and a .05 screen bypass capacitor.

B20 — A new deflection yoke part #100-0002 was used . A taped horizontal output choke is used also. A partial schematic of the horizontal deflection coils and choke is shown below. (Fig. 2)

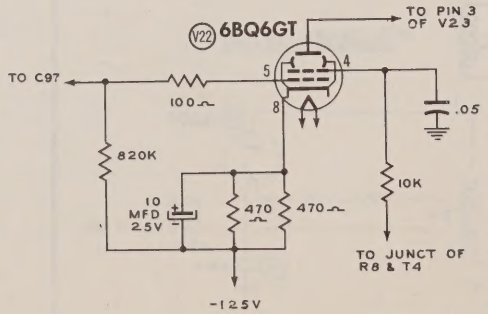


FIG. 1

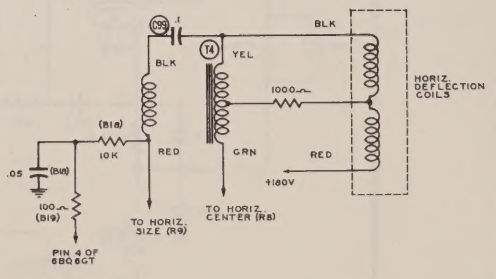


FIG. 2

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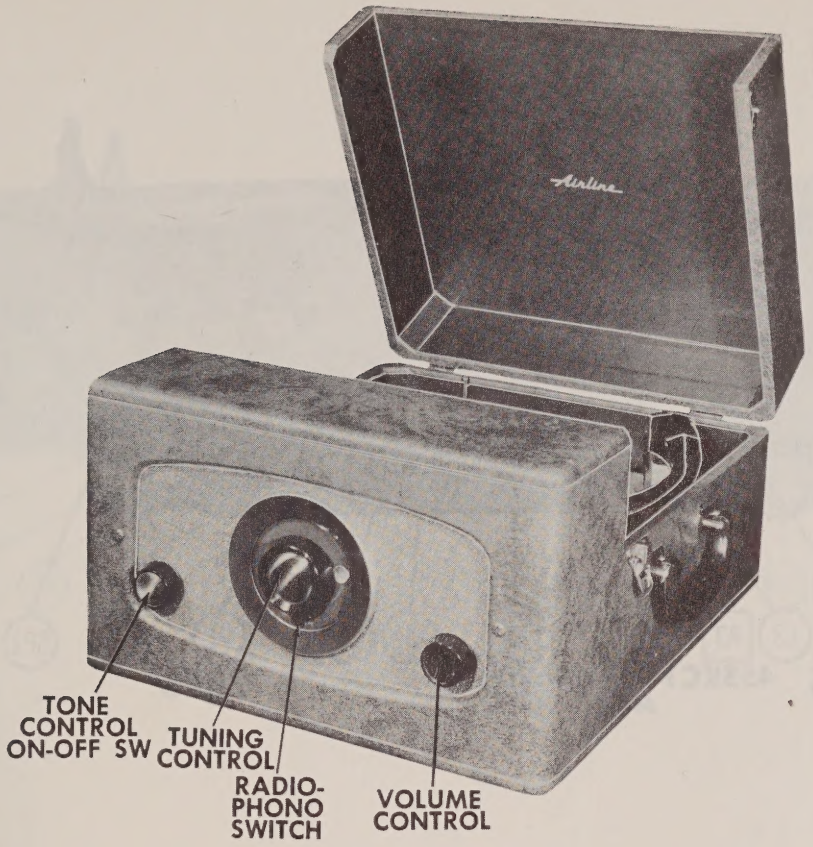
AIRLINE
MODEL 25GAA-996A



AIRLINE
MODEL 25GAA-996A

TRADE NAME	Airline Model 25GAA-996A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC Operated AM-Phono Combination Superheterodyne Receiver with 3 Speed Automatic Record Changer
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycle RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator lug of front section of tuning gang. Low side to B-.	455 KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1620 KC	"	"	A5	"
3.		Loop	1400 KC	Tune to 1400 KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	600 KC	Tune to 600 KC signal	"		Check tracking at 600KC. Bend outer plates of front section of tuning gang if necessary, then repeat step.3.

After alignment replace chassis in cabinet, turn tuning gang fully closed and set pointer parallel with base of cabinet at low frequency end of dial.

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT- SEE SIMILAR V-M MODEL 950 - PHOTOFACT SET #107 - FOLDER 13 OR RECORD CHANGER MANUAL CM-3.

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PARTS LIST AND DESCRIPTIONS

AIRLINE
MODEL 25GAA-996A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	40	150	1010A	PRS150/50-30-20		EZ44315C		3N532	TVA-3430	Red
B	40	150						TC26	TVA-1410	Red
C	20	150		PRS25/25						Yellow
D	20	25								Blue
C2	5000		824	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C3	.1	200	804	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C4	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	Notes 1, 2
C5	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	Note 2
C6	10000		†813	BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C7	250		817	SI250	D6-251	5W5T25	GP2K-251	UC-5325	5GA-T25	
C8	10000			SI10000	D6-103	TM5S1	GP2-333-103	UC-511	5HK-S1	Note 3
C9	.01	400	825	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C10	5000		824	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C11	5000		824	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C12	.1	200	804	P288-1	DF-104	PJ2P1		PT401	2TM-P1	

Note 1. Not used in all Models.
Note 2. Some models combine C4, C5, R5 in one unit (Part #811)
Note 3. Some models combine C8 and R8 in one unit (Part #814)
† Items C6 and R7 are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	408	Q13-133	AG-60-Z	BSK-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
R2A	500KΩ	½	401	Q13-133	AG-60-Z	BSK-60-S	U-48	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R2A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R2A

RESISTORS

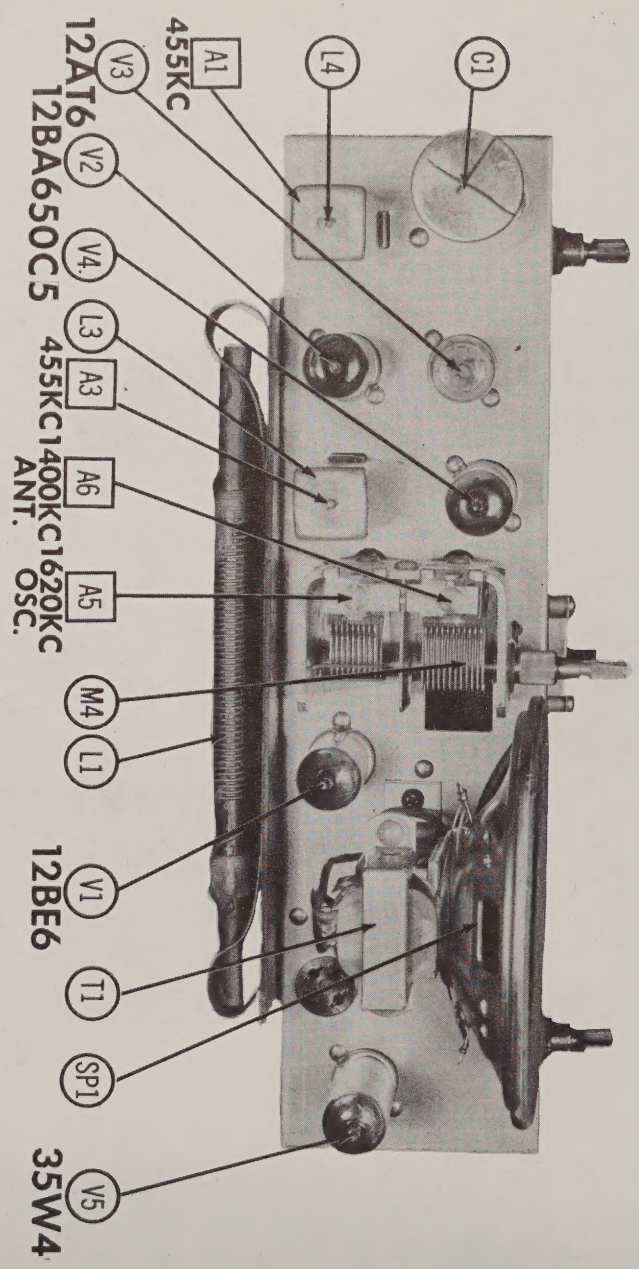
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	NOTES	ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	NOTES
R3	22KΩ	½	517	BTS-22K		R11	150Ω	½	505	BTS-150	
R4	2.2Meg	½	615	BTS-2.2Meg		R12	1000Ω	1	607	BTA-1000	
R5	50KΩ	½			Note 1	R13	270Ω	1	602	BTA-270	
R6	47Ω	½	520			R14	30Ω	½	534		
R7	5Meg	½	†813			R15	510K	½	502		
R8	150KΩ	½		BTS-150K	Note 2	R16	510K	½	502		Note 3
R9	1Meg	½	516	BTS-1Meg		R17	150Ω	½	505	BTS-150	Note 3
R10	510KΩ	½	502								

Note 1. Some models combine R5, C4, C5 in one unit (Part #811)
Note 2. Some models combine R8, C8 in one unit (Part #814)
Note 3. Not used in all models
† Items R7, C6 are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	1.9KΩ	3.3Ω	146Ω	.44Ω	Part of spkr.	A-3332	A-2928 ①	RO-2 ①	S-2X ①	① Drill new mtg. hole

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	AIR LINE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.3Ω	45E070X21-2	ST740 Mod. P5-X	5A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	AIR LINE PART No.	MERIT PART No.	
L1	Loop Ant.	.4Ω		1512		
L2	Osc. Coil	5.5Ω		1403		Tapped @ 5Ω
L3	Input IF	12.5Ω	14Ω	1402	BC-352	
L4	Output IF	12.5Ω	14Ω	1402	BC-353	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	AIR LINE PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	2534	AC-AG-J	A-AG	W26B	A66U	33	0-2 or S-2	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTING SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

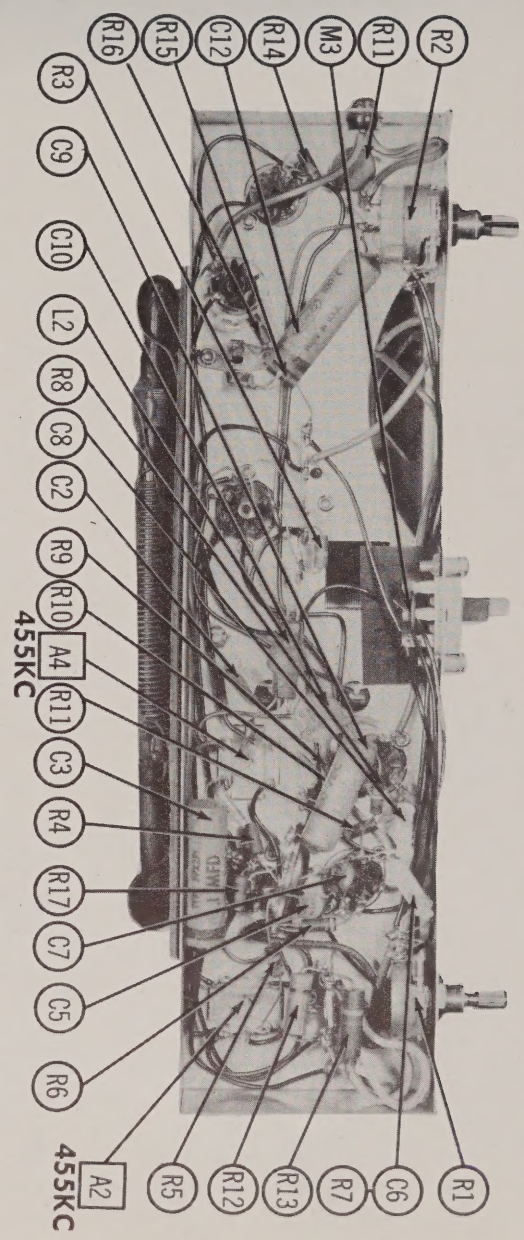
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	AIR LINE PART No.	WALCO PART No.	JENSEN PART No.	
M2	254F	W-20AGA or W-21AGS	E-962 or E-902	

MISCELLANEOUS

ITEM No.	PART NAME	AIR LINE PART No.	NOTES
M3	Switch	1892A	Radio-Phono
M4	2 Gang Var. Cap.	1011	(28-410MMF, 23-200MMF)
	Pointer	1737	
	Knob	2414	Volume & Radio-Phono Switch
	Knob	2415	Tuning

CHASSIS—BOTTOM VIEW



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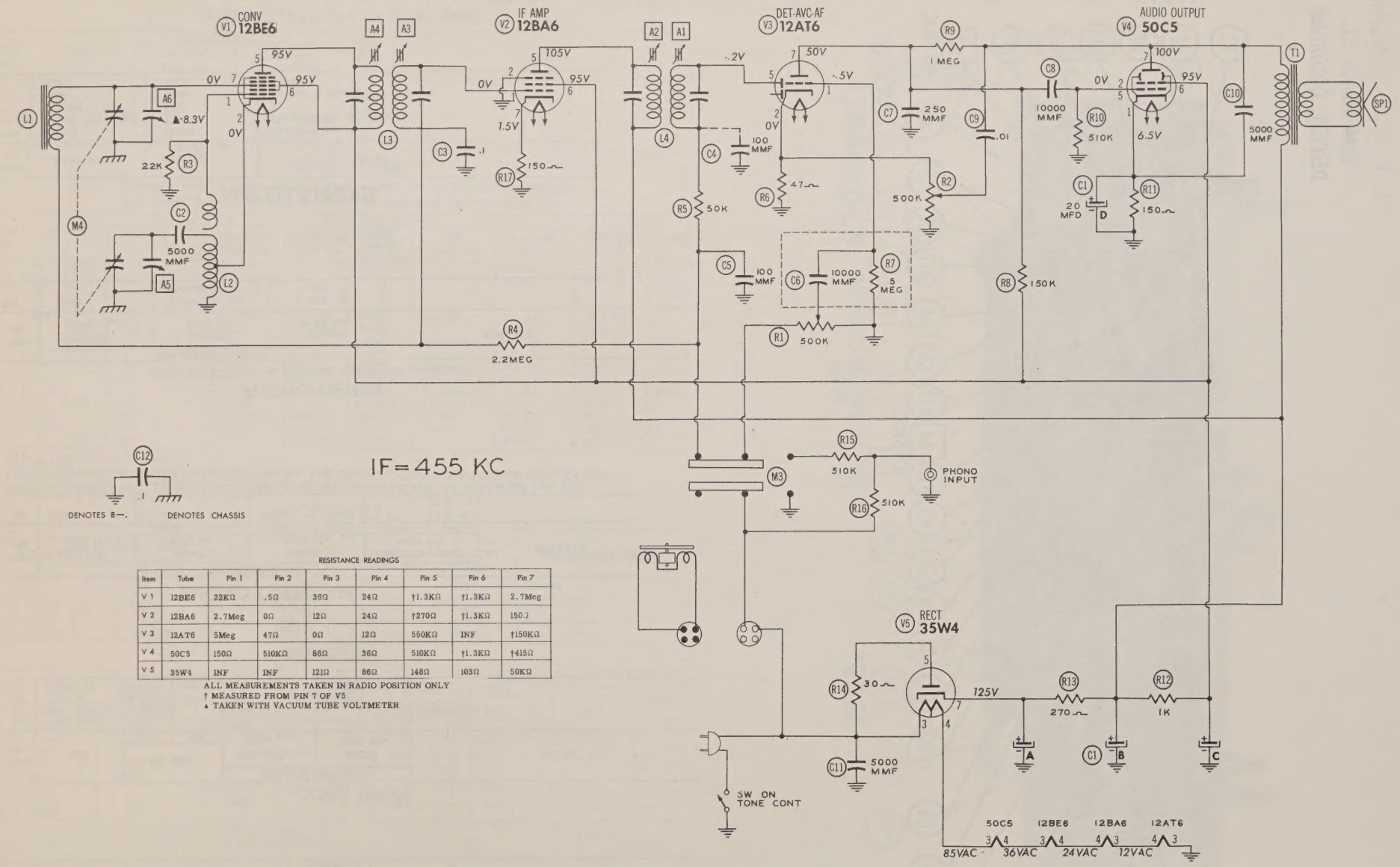
DENVER, COLORADO

AIRLINE MODEL 25GAA-996A

SET 182 FOLDER 2

AIRLINE MODEL 25GAA-996A



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.5Ω	36Ω	24Ω	†1.3KΩ	†1.3KΩ	2.7Meg
V 2	12BA6	2.7Meg	0Ω	12Ω	24Ω	†270Ω	†1.3KΩ	150Ω
V 3	12AT6	5Meg	47Ω	0Ω	12Ω	550KΩ	INF	†150KΩ
V 4	50C5	150Ω	510KΩ	86Ω	36Ω	510KΩ	†1.3KΩ	†415Ω
V 5	35W4	INF	INF	121Ω	86Ω	146Ω	103Ω	50KΩ

ALL MEASUREMENTS TAKEN IN RADIO POSITION ONLY
† MEASURED FROM PIN 7 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder
*TRADE MARK

CORONADO MODELS K-21 (43-9041), K-72 (43-9031), K-73L (43-9030)

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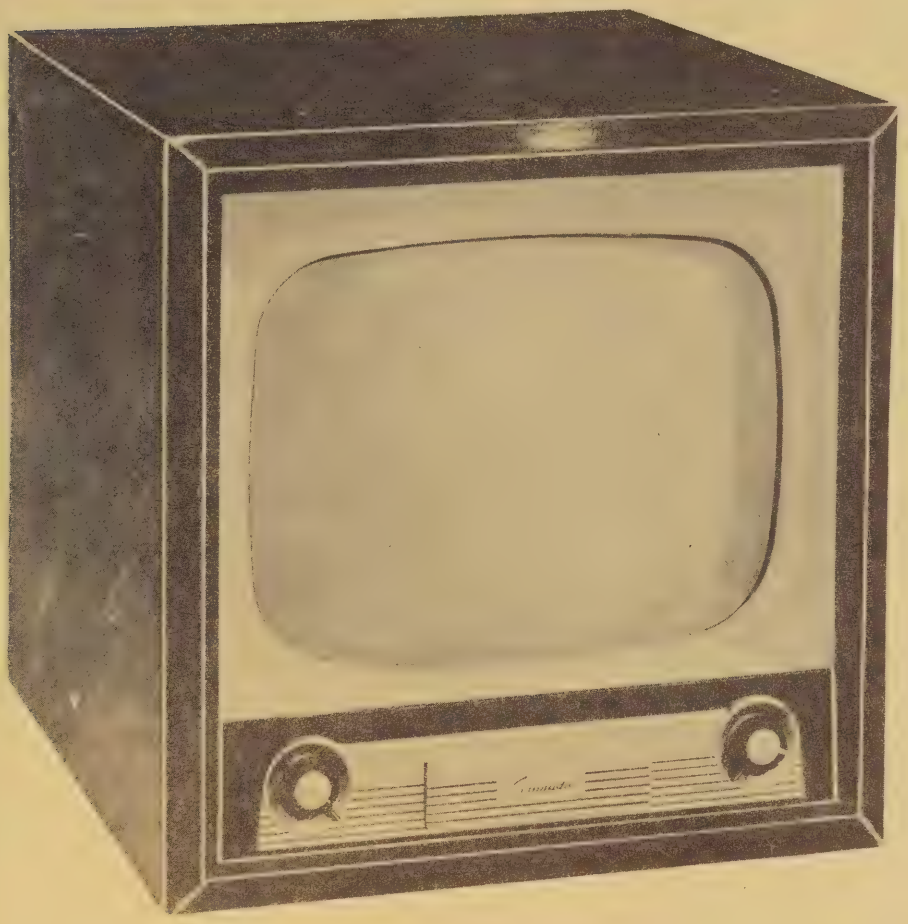

CORONADO MODELS K-21 (43-9041), K-72 (43-9031), K-73L (43-9030)

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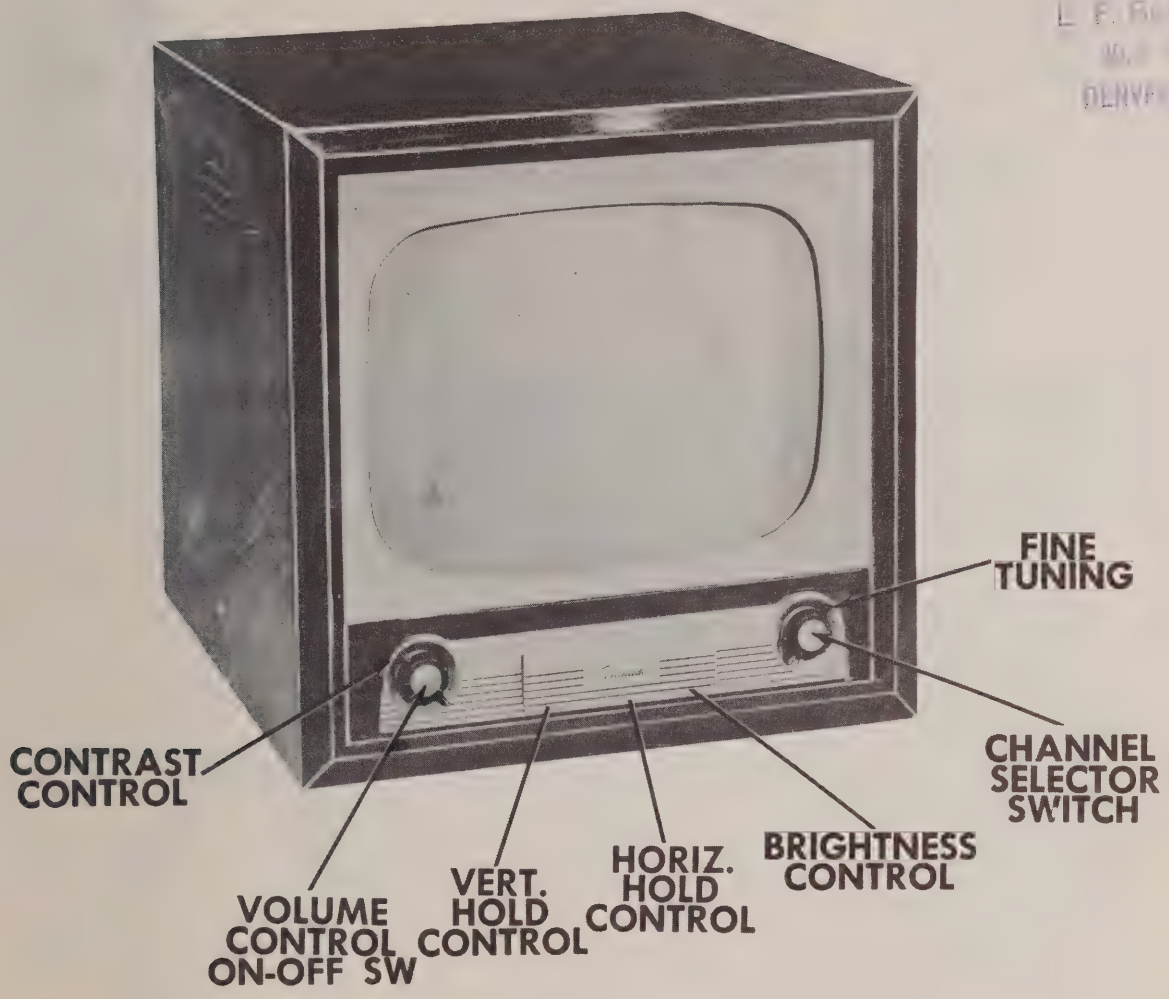

CORONADO MODELS K-21 (43-9041), K-72 (43-9031), K-73L (43-9030)

TRADE NAME	Coronado Models K-21(43-9041), K-72(43-9031), K-73L(43-9030)
SUPPLIER	Gamble-Skogmo Inc., 15 N. 8th. St., Minneapolis, Minn.
TYPE SET	Television Receiver
TUBES	Eighteen
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.42 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13

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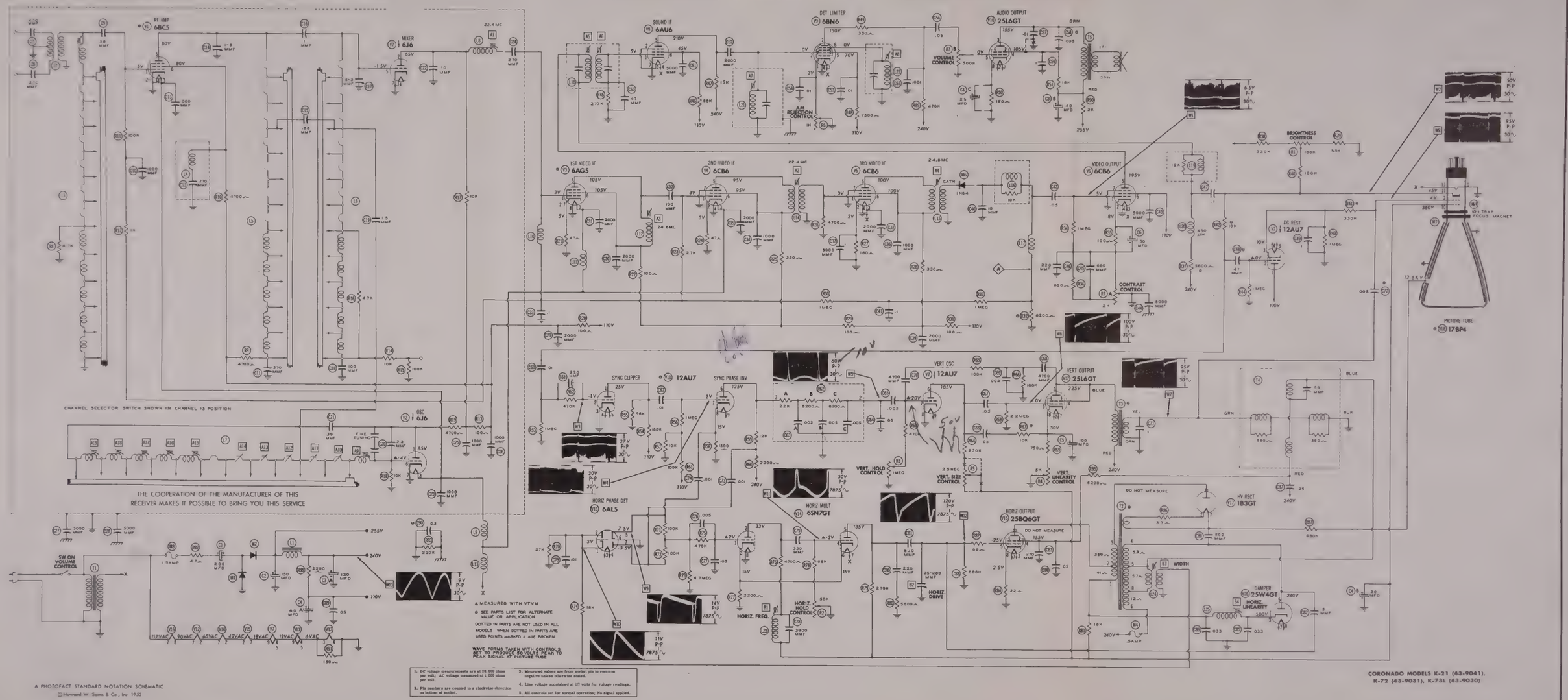
RF AMP 6BC5
MIXER 6J6
SOUND IF 6AU6
DET LIMITER 6BN6
AUDIO OUTPUT 25L6GT
1ST VIDEO IF 6AG5
2ND VIDEO IF 6CB6
3RD VIDEO IF 6CB6
VIDEO OUTPUT 6CB6
OSC 6J6
SYNC CLIPPER
SYNC PHASE INV 12AU7
VERT OSC 12AU7
VERT OUTPUT 25L6GT
HORIZ PHASE DET 6AL5
HORIZ MULT 6SN7GT
HORIZ OUTPUT 25BQ6GT
DC REST 12AU7
HV RECT 1B3GT
DAMPER 25W4GT
PICTURE TUBE 17BP4
VOLUME CONTROL
AM REJECTION CONTROL
BRIGHTNESS CONTROL
CONTRAST CONTROL
VERT. HOLD CONTROL
VERT. SIZE CONTROL
VERT. LINEARITY CONTROL
HORIZ. DRIVE
HORIZ. FREQ.
HORIZ. HOLD CONTROL
HORIZ. LINEARITY
WIDTH
ION TRAP FOCUS MAGNET
SW ON VOLUME CONTROL
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
FINE TUNING
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DO NOT MEASURE
112VAC 90VAC 65VAC 42VAC 18VAC 12VAC 6VAC
255V
240V
110V
△ MEASURED WITH VTVM
◎ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 20,000 ohms per volt, AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; No signal applied.

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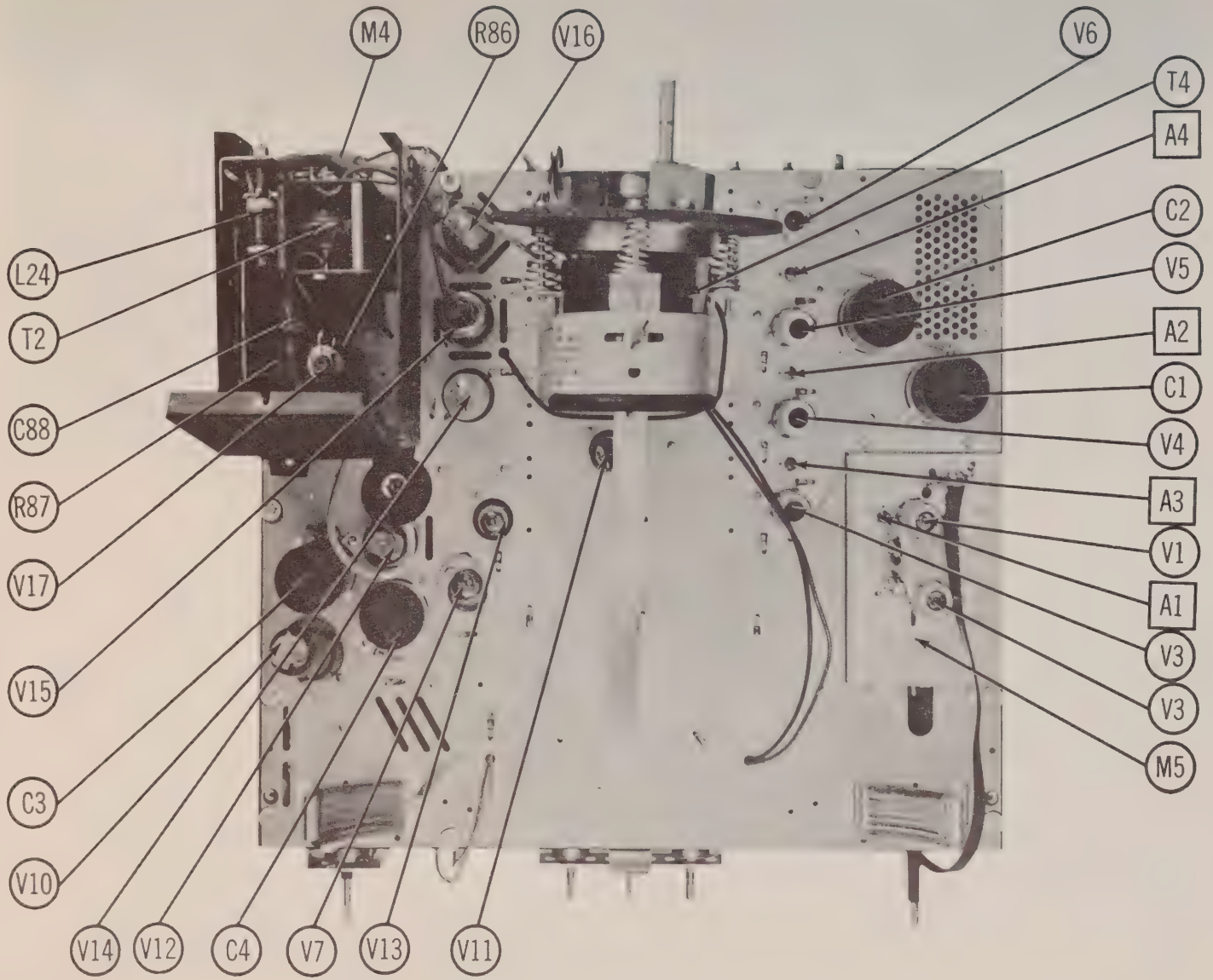
CORONADO MODELS K-21 (43-9041), K-72 (43-9031), K-73L (43-9030)

CORONADO MODELS K-21 (43-9041), K-72 (43-9031), K-73L (43-9030)



CHASSIS TOP VIEW

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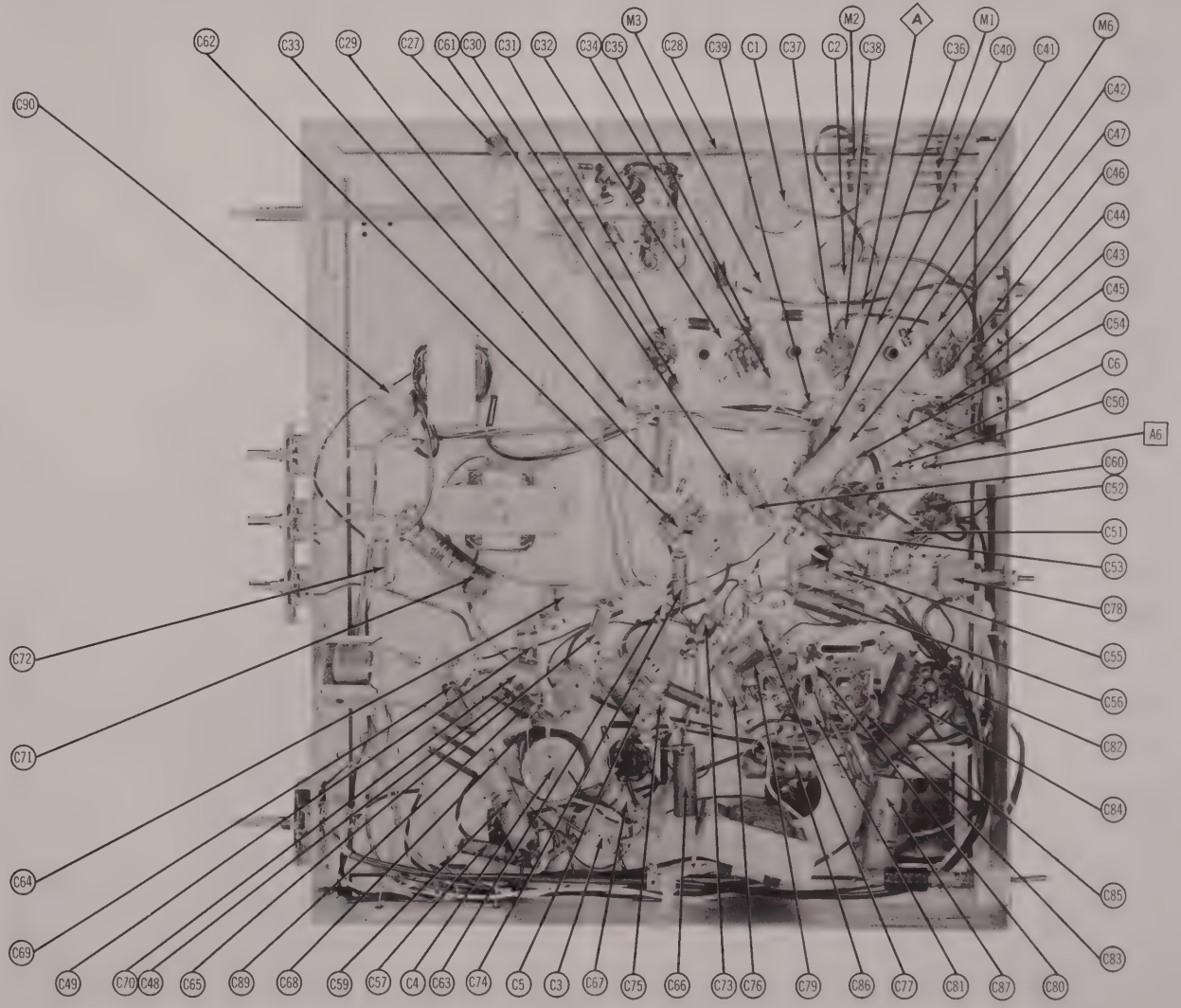

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART

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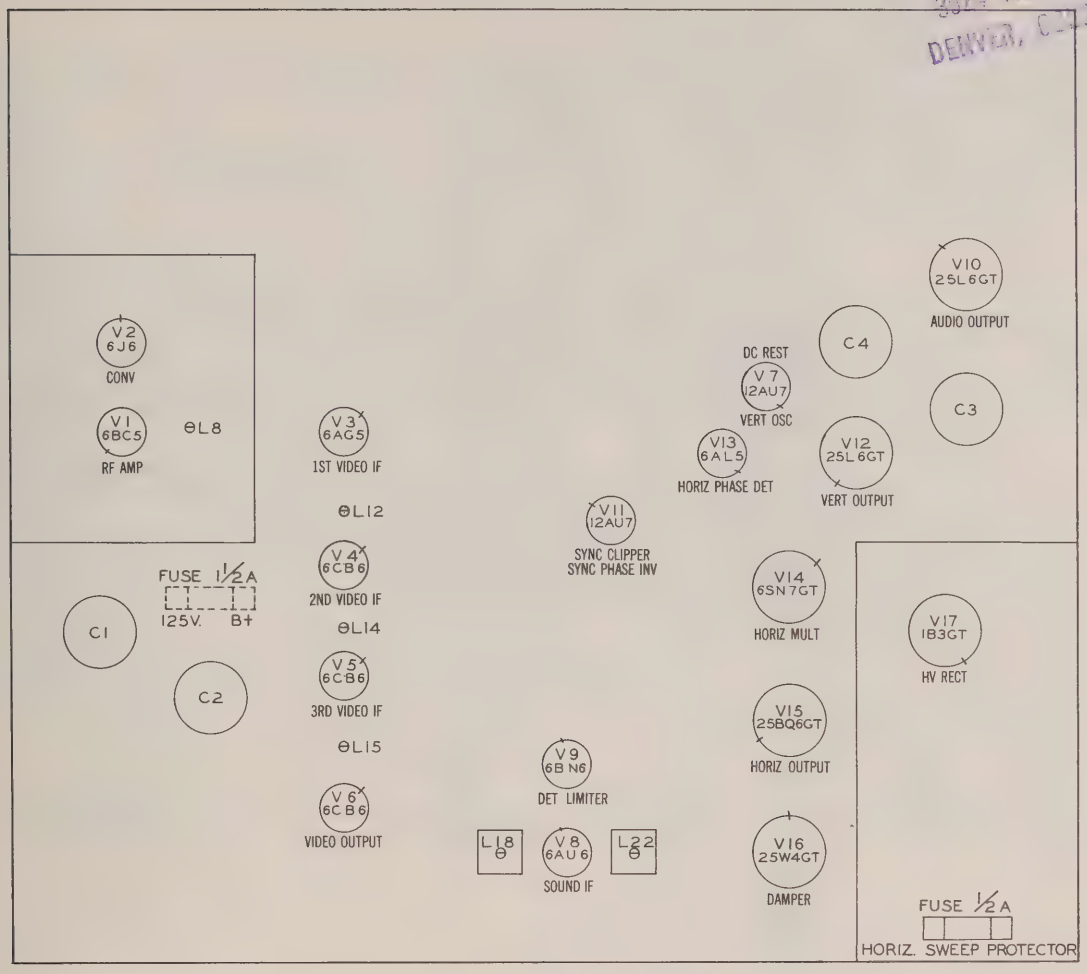

TOP VIEW

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most liekly to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No Raster, No Sound - Selenium Rectifier (M1, M2), Fuse (M3)

LOSS OF PICTURE OR SOUND
No Pic, No Sound, Has Raster - V2, V3, V4, V5, V6
No Pic, No Sound, Has Snow - V1, V2, V3
No Pic, Has Sound, Has Raster - V6, V7, V18
Has Pic, No Sound - V8, V9, V10

SYNC FAILURE
No Vert. Sync - V7, V11
No Horiz. Sync - V11, V13, V14
No Vert. or Horiz. Sync - V11, V7

SWEEP FAILURE
No Raster, Has Sound - V14, V15, V16, V17, V18, Fuse (M4)
No Vertical Deflection - V12
Poor Vert. Linearity or Foldover - V12, V7
Poor Horiz. Linearity or Foldover - V14, V15, V16
Narrow Picture - V14, V15, V16, M1, M2
Vert. Off Freq. - V7, V11
Horiz. Off Freq. - V11, V13, V14

NOTE: Since this receiver employs series connected filament, an open filament in any tube in series may cause the set to be inoperative.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multivibrator tube to disable the high voltage.
Make all test equipment ground returns to B- (top chassis plate).
Use isolation transformer to protect the test equipment.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to B-.	22.4MC (Unmod.)	Any	DC probe to point (A). Common to B-.	A1, A2	Adjust for maximum deflection.
2.	"	"	24.6MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to B-.	24MC (10MC Swp)	20.6MC 22.0MC 25.1MC 26.6MC	Any	Vert. amp. to point (A). Low side to B-.		Check for response curve similar to fig.1 If necessary retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Tune in a TV station and connect an attenuator in series with the antenna.
Attenuate the input until the sound signal drops below the limiting level of the 6BN6 as indicated by a hiss similar to superregeneration.
Adjust the sound take-off transformer (A5 and A6) for maximum audio.
Adjust A7 for maximum audio signal regardless of hiss or buzz. If during the above adjustments the signal rises above the limiting level as indicated by the disappearance of the hiss, reduce the signal input until the hiss returns.
When maximum sound output has been reached through adjustment of A5, A6 and A7 increase the signal input to the point where the hiss disappears and adjust A8 for maximum sound output.
Adjust the AM rejection control R6 for minimum intercarrier buzz, then repeat the adjustment of A8 and R6.

OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.
There is no individual oscillator adjustment for channel 7 as the alignment for channel 8 assures proper alignment of channel 7 oscillator.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. to point (A). Low side to B-.	A9	Adjust to place video marker at 50% on response curve as per fig. 2.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A10	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A11	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A12	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A13	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A14	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A15	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A16	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A17	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A18	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A19	

The RF and Mixer portion of this tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

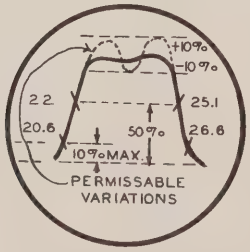

FIG. 1

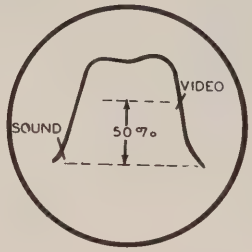

FIG. 2

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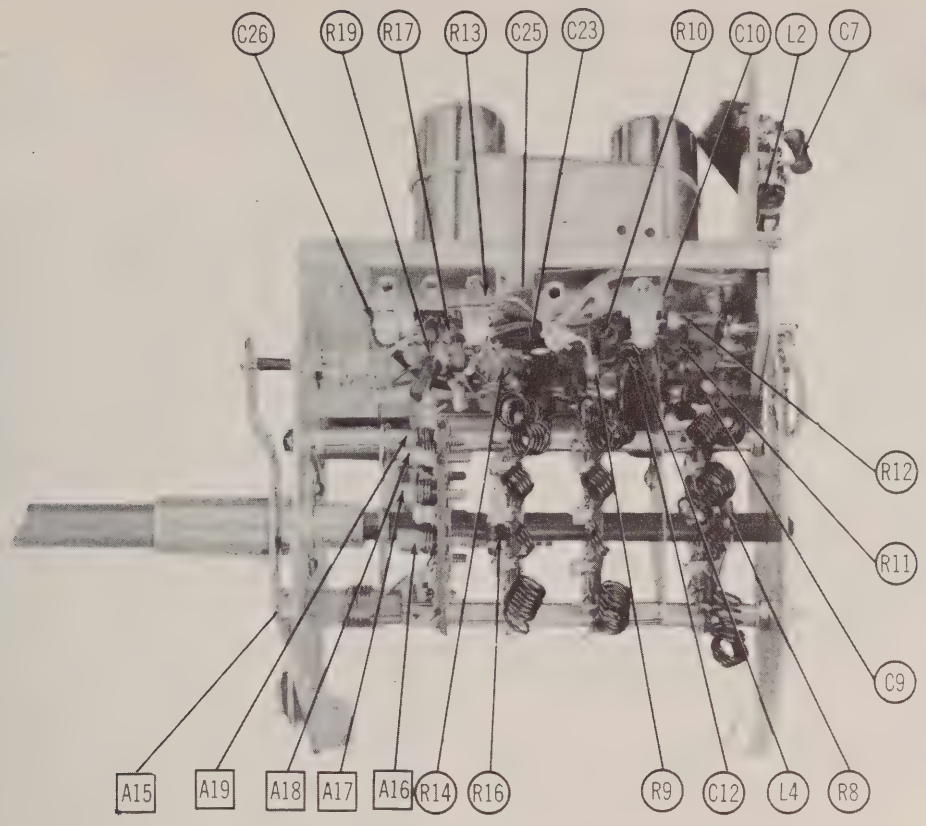
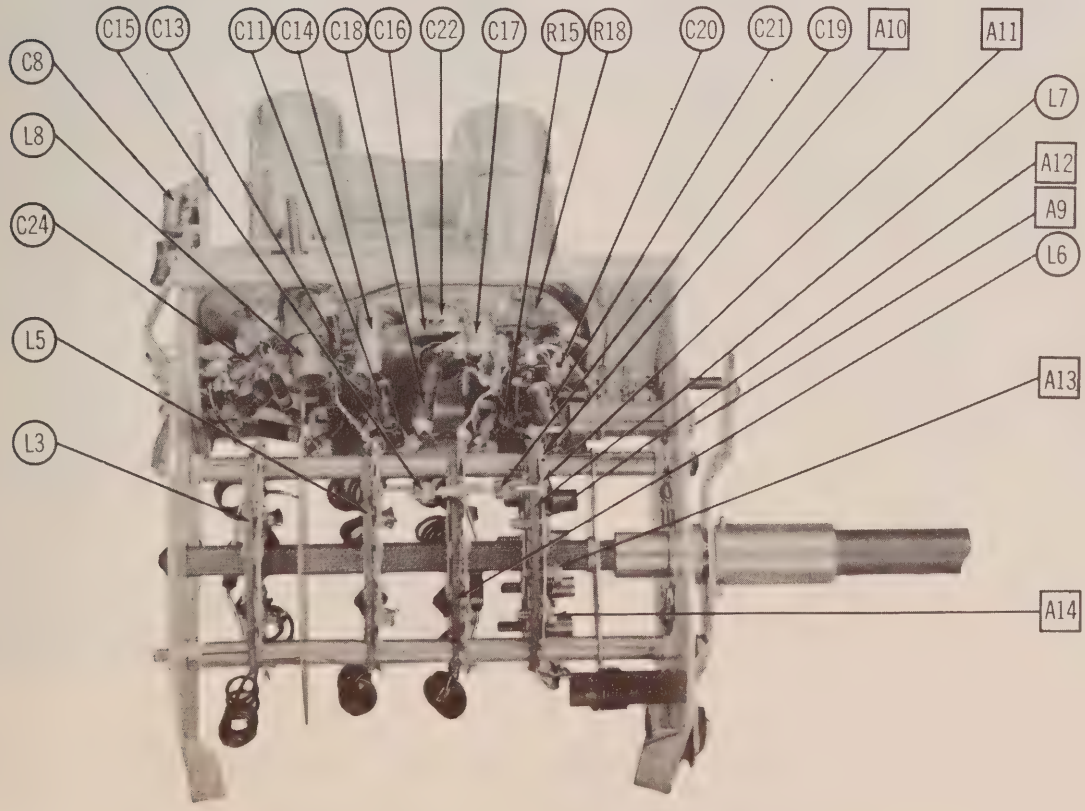


RF TUNER-RIGHT SIDE

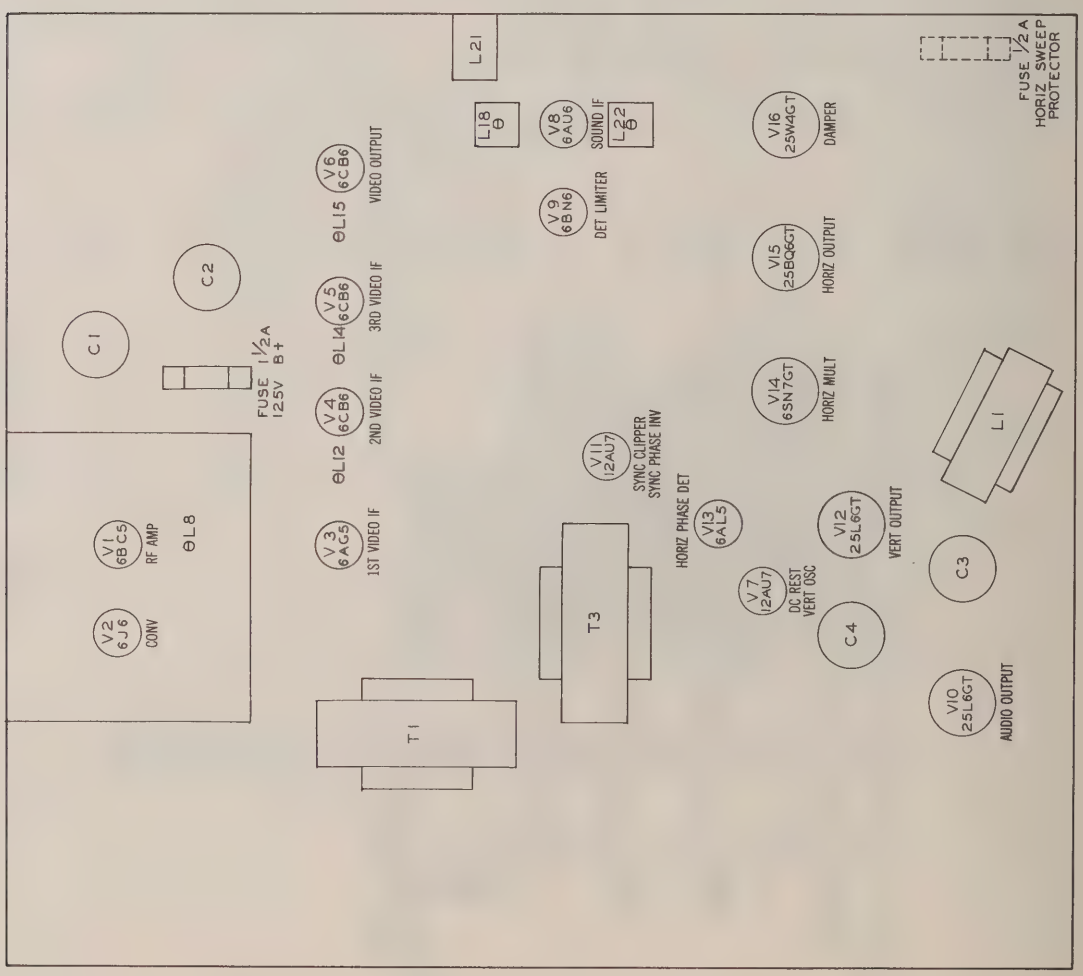


RF TUNER-LEFT SIDE

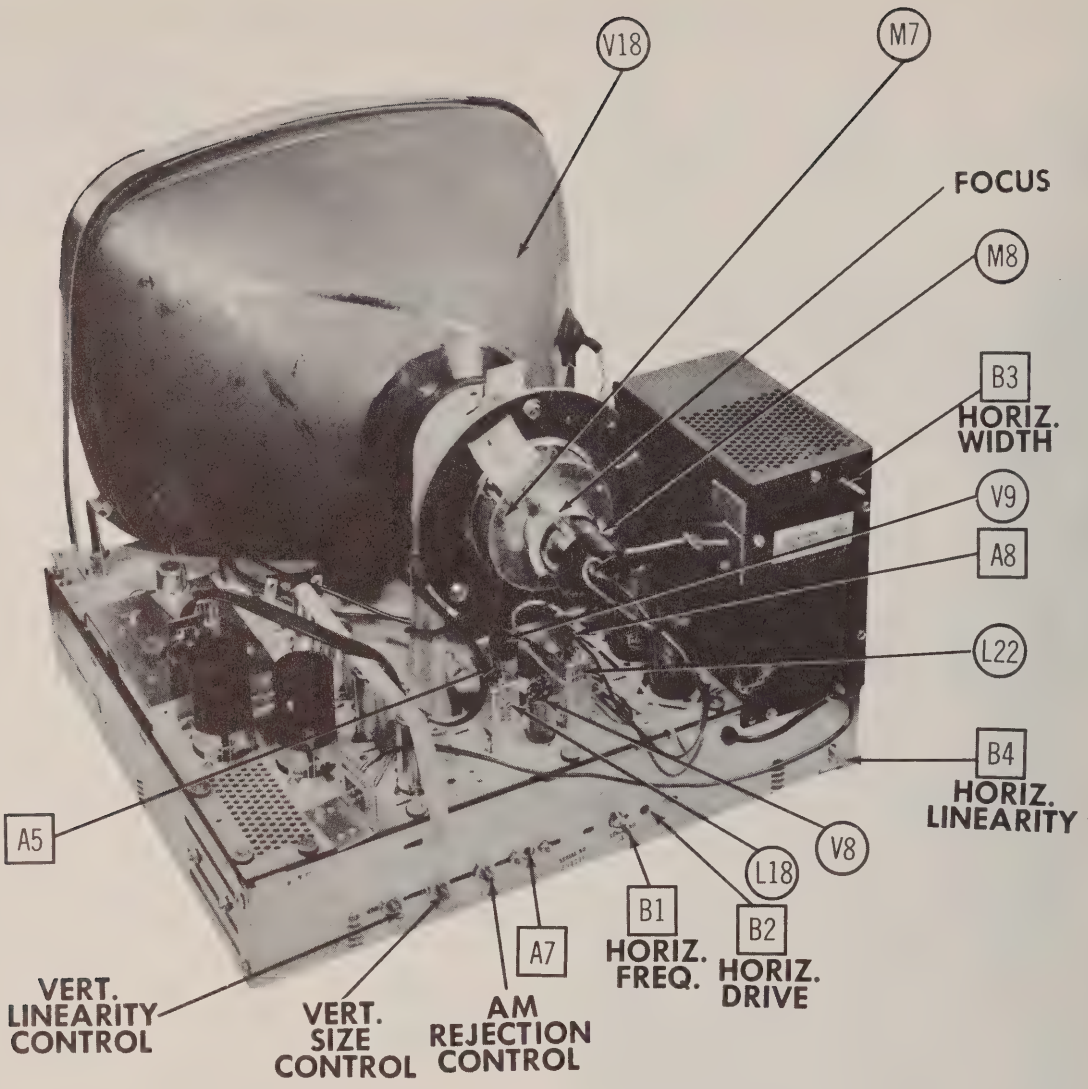
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	2.1Meg	0Ω	.1Ω	0Ω	†7.1KΩ	†7.1KΩ	0Ω		
V 2	6J6	†7.2KΩ	†12KΩ	.1Ω	0Ω	110KΩ	10KΩ	0Ω		
V 3	6AG5	2Meg	47Ω	.1Ω	0Ω	†2.6KΩ	†2.6KΩ	47Ω		
V 4	6CB6	2Meg	47Ω	.1Ω	0Ω	†2.8KΩ	†2.8KΩ	0Ω		
V 5	6CB6	.2Ω	180Ω	.1Ω	0Ω	†2.7KΩ	†2.7KΩ	0Ω		
V 6	6CB6	1Meg	1KΩ	.1Ω	0Ω	†5.7KΩ	†2.3KΩ	0Ω		
V 7	12AU7	†2.3KΩ	1Meg	1Meg	8Ω	8Ω	#1.7Meg	1Meg	0Ω	9Ω
V 8	6AU6	270KΩ	0Ω	0Ω	.1Ω	†15KΩ	†68KΩ	0Ω		
V 9	6BN6	400Ω	1.9Ω	.1Ω	0Ω	†9.8KΩ	22Ω	†470KΩ		
V 10	25L6GT	INF	16Ω	†2.3KΩ	†20KΩ	180KΩ	INF	19Ω	150Ω	
V 11	12AU7	56KΩ	1.5Meg	0Ω	4Ω	4Ω	†14KΩ	1Meg	1.5KΩ	8Ω
V 12	25L6GT	INF	19Ω	†785Ω	†785Ω	2.2Meg	#1.5Meg	21Ω	1KΩ	
V 13	6AL5	12KΩ	12KΩ	4Ω	0Ω	4.8Meg	0Ω	4.8Meg		
V 14	6SN7GT	5.1Meg	#22KΩ	2.2KΩ	100KΩ	#290KΩ	2.2KΩ	.1Ω	0Ω	
V 15	25BQ6GT	0Ω	16Ω	INF	†6.3KΩ	680KΩ	56KΩ	9Ω	22Ω	TOP CAP #68Ω
V 16	25W4GT	INF	INF	1.8Meg	INF	†90Ω	1.8Meg	19Ω	21Ω	
V 17	1B3GT	PINS	1 - 8	HAVE	INF	RESISTANCE				TOP CAP #437Ω
V 18	17BP4	0Ω	1.3Meg	PIN 10 #18KΩ	PIN 11 160KΩ	PIN 12 .1Ω				

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM OUTPUT OF M 2
# MEASURED FROM PIN 3 OF V16



TUBE PLACEMENT CHART



CHASSIS – REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) for the best compromise between brightness and horizontal linearity.

Adjust the width slug (B3) for a picture slightly wider than enough to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

Slight readjustment of B2 may be necessary for optimum results .

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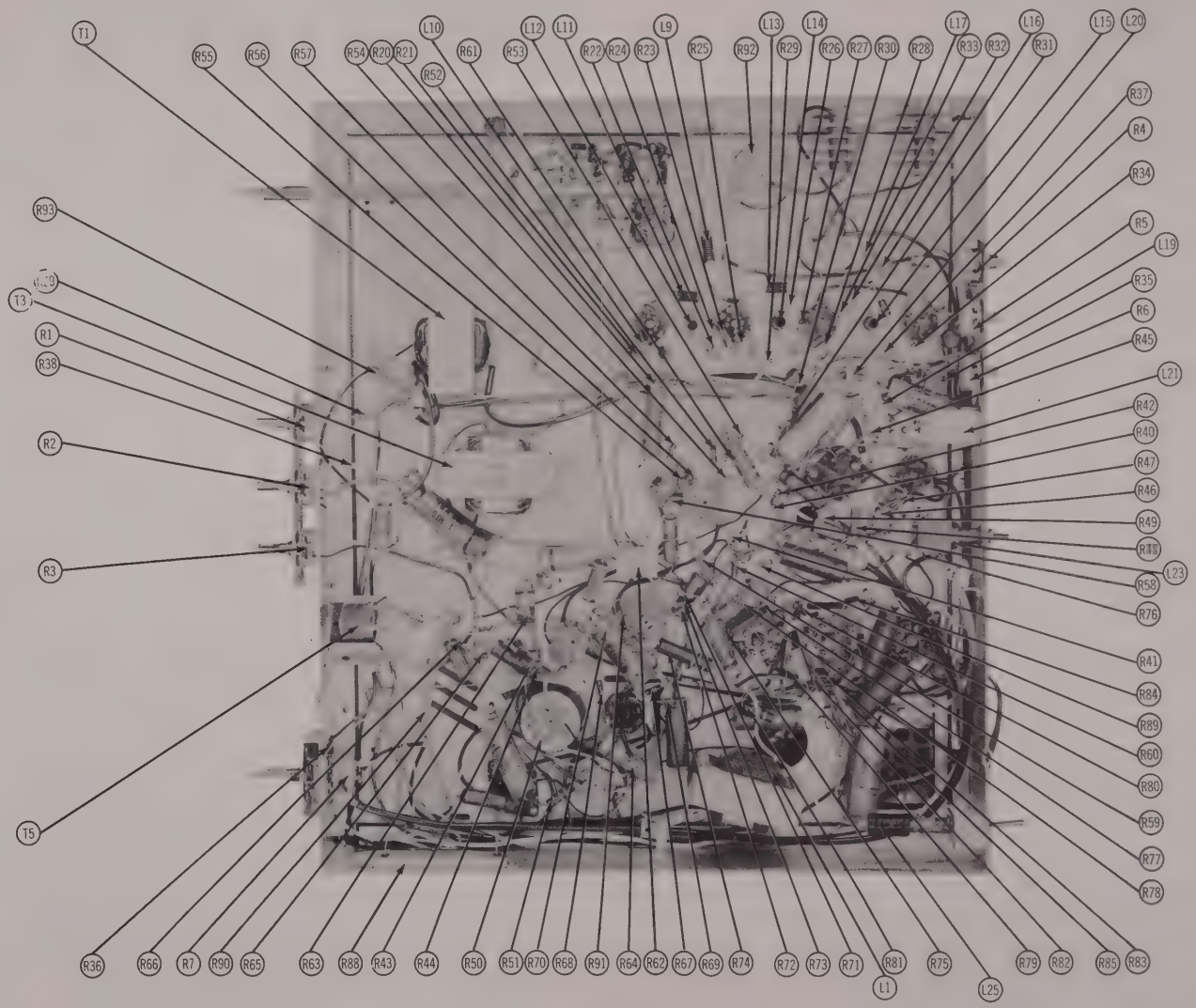


CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CORONADO Part No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6BC5	6BC5	7BD	
B	RF Amplifier	6AG5	6AG5	7BD	
C	RF Amplifier	6CB6	6CB6	7CM	
V2	Converter	6J6	6J6	7BF	
V3A	1st. Video IF Amp.	6AG5	6AG5	7BD	
B	1st. Video IF Amp.	6BC5	6BC5	7BD	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	6CB6	6CB6	7CM	
V7	DC Restorer-Vert. Oscillator	12AU7	12AU7	9A	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Detector - Limiter - AF Amplifier	6BN6	6BN6	7DF	
V10	Audio Output	25L6GT	25L6GT	7AC	
V11A	Sync Clipper - Sync Phase Inv.	12AU7	12AU7	9A	
B	Sync Clipper - Sync Phase Inv.	12AT7	12AT7	9A	
V12	Vert. Output	25L6GT	25L6GT	7AC	
V13	Horiz. Phase Det.	6AL5	6AL5	6BT	
V14	Horiz. AFC-Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V15	Horiz. Output	25BQ6GT	25BQ6GT	6AM	
V16	Damper	25W4GT	25W4GT	4CG	
V17	HV Rectifier	1B3GT	1B3GT	3C	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: CORONADO Part No.	REPLACEMENT DATA: SYLVANIA Part No.	RTMA BASE TYPE	NOTES
V18A	17BP4	17BP4	12D	① Circuit changes necessary
		17BP4A	12D	② 3/8" longer
		17HP4 ①	12C	
		17HP4A ①	12C	
B	17CP4	17CP4	12D	
C	17RP4	17RP4 ①	12C	
		17BP4 ①	12D	
D	20BP4	20BP4	12D	
E	20CP4	20CP4	12D	
		20CP4A ①	12D	
		20DP4 ① ②	12D	
		20DP4A ②	12D	
		20HP4 ① ②	12C	
		20HP4A ① ②	12C	
		20LP4 ① ②	12C	
		20MP4 ① ②	12C	
F	20RP4		12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CORONADO Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C1	200	150	CEM-9-E	AFH2-22				FP19	TVL-1431	
C2	150	300	CEM-10-E					FP229.3	TVL-1584	
C3A	40-120	300	CEM-11					FP140	TVL-3585	
B	40	300						TC78		
C4A	40	450	CEM-12	AFH4-67		UP4245C		FP346	TVL-4128	
B	80	450								
C	25	25								
C5	100	25	CET-5	PRS25/100		BRH25A		TC2501	TVA-1207	
C6	50	25	CET-8	PRS25/50		BRS02A		TC29	TVA-1206	
C7	270			S1270	D6-271		GP2K-271	UC-5327	5GA-T27	
C8	270			S1270	D6-271		GP2K-271	UC-5327	5GA-T27	
C9	39			S139	D6-390		GP1K-390	UC-5439	5GA-Q39	
C10	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C11	270			S1270	D6-271		GP2K-271	UC-5327	5GA-T27	
C12	270			S1270	D6-271		GP2K-271	UC-5327	5GA-T27	
C13	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C14	1-6				829-6					
C15	.68				TCZ-.68		NP0K-R68			
C16	1				TCZ-1		NP0K-010		5TCCB-V1	
C17	.5-3				829-3			CT565A		
C18	100			S1100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C19	1.5			S11.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C20	2.2						N750K-2R2			
C21	39			S139	D6-390		GP1K-390	UC-5439	5GA-Q39	
C22	10			S110	D6-100		GP1K-100	UC-541	5GA-Q1	
C23	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C24	270			S1270	D6-271		GP2K-271	UC-5327	5GA-T27	
C25	1000			BPD-001	DD-102	TM5D1	001-001	DC-521	5HK-D1	
C26	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C27	5000		CC-25	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C28	5000		CC-25	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C29	2000		CC-22	BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C30	2000		CC-22	BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C31	2000		CC-22	BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C32	100		CC-31	S1100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C33	.1	200	CP-2-01	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C34	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C35	2000		CC-22	BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C36	1000		CC-21	S1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C37	5000		CC-25	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C38	2000		CC-22	BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C39	2000		CC-22	BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C40	10		CC-41	S110	D6-100	5W5Q1	GP1K-100	UC-541	5GA-Q1	
C41	.1	200	CP-2-01	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C42	.05	200	CP-2-15	P288-05	DF-503	PJ2B5		PT415	2TM-S5	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CORONADO Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C43	5000		CC-25	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C44	5000		CC-25	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C45	880		CC-368	S1880	D6-881	2S5T7	GP2K-681	UC-5368	5GA-T68	
C46	220		CC-322	S1220	D6-221	5W5T25	GP2K-221	UC-5322	5GA-T22	
C47	.1	600	CP-6-01	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C48	47		CC-447	S147	D6-470	5W5Q5	GP1K-470	UC-5447	5GA-Q47	Note 1
C49	.1	300	CP-2-01	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C50	47		CC-447	S147	D6-470	5W5Q5	GP1K-470	UC-5447	5GA-Q47	
C51	5000		CC-25	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C52	3000		CC-32	BPD-002	DD-302	TM5D2	801-001	DC-522	5HK-D2	
C53	.01	600	CP-6-11	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C54	.01	600	CP-6-11	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C55	.001	600	CP-6-21	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C56	.05	600	CP-6-15	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C57	.01	1000	CP-10-11	P1088-01		PTE10S1		PT611	MB-S1	
C58	.005	1000		P1088-005		PTE10D5		PT625	MB-D5	Note 2
C59	.1	600	CP-6-01	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C60	.01	600	CP-6-11	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C61	.220	500	CM-322	1468-00025	D6-221	5W5T25	GP2K-221	MC240	1FM-325	
C62	.01	600	CP-6-11	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C63A	.002		P688-002		D6-202	PTE6D2	GP2-333-202	PT622		
B	.005		*CRP-3	P688-005		*PC-100	GP2-333-502	PT625	e101C1	
C	.005			P688-005			PTE6D5	GP2-333-502	PT625	
C64	.05	600	CP-6-15	P688-05	DF-503		PTE6S5		PT615	6TM-S5
C65	.005	600	CP-6-25	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C66	.05	600	CP-6-15-9	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C67	.05	600	CP-6-15	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C68	4700	800	CM-247A-1							
C69	.002	600	CP-6-23	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C70	4700	800	CM-247A-1							
C71	.1	600	CP-6-01-3	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C72	.002	600	CP-6-23	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	Note 3
C73	.001	600	CP-6-21	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C74	.001	600	CP-6-21	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C75	.01	600	CP-6-11	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C76	.005	600	CP-6-25	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C77	.05	600	CP-6-15	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C78	3900	500	CM-239	1464-004		IDR5D4		MCB463		
C79	330	500	CM-339A	1469-00035						
C80	220	500	CM-322	1469-00025		5R5T25		MCB240		
C81	820	500	CM-382					MCK382		
C82	5	5000	CHV-55-5K							
C83	270	500	CM-327	1468-0003	D6-271	5W5T3	GP2K-271	MC241	MS-33	
C84	.05	600	CP-6-15	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C85	.033	1000	CO-10-13	P1088-033		PTE10S3		TP464	MB-S3	
C86	.033	1000	CO-10-13	P1088-033		PTE10S3		TP464	MB-S3	
C87	.25	400	CP-4-025	P488-25		PTE4P25		TP430	4TM-P25	
C88	500	20000	CHV-15-20A	HV-20C	TV3-502	MM-C20TS			20DK-T5	
C89	.05	200	CP-2-15	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C90	.03	600		P688-03		PTE6S5		PT613	6TM-S3	Note 1

Note 1. Some models use .05MFD in this application (Part #CP-6-15)
Note 2. Not used in all models.
Note 3. Some models use .01MFD in this application (Part #CP-6-11)
* Items C63A, C63C, C63C, R62A, R62B, R62C are combined in one unit.

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CORONADO Part No.	IRC Part No.	CLAROSTAT Part No.	CENTRALAB Part No.	MALLORY Part No.	INSTALLATION NOTES
R1A	100KΩ	½	P-15 §	Q11-128	AG-49-S	AB-40	U-41	Brightness
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
R2A	50KΩ	½	P-14 ¶	Q11-123	AG-44-S	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
R3A	1Meg	½	P-13 *	Q11-137	AG-61-S	AB-60	U-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R3A
R4A	5000Ω	½	P-22D	Q11-114	AG-19-S	AB-13	SU-14	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R4A
R5A	2.5Meg	½	P-5D	Q11-239	AG 84-S	AB-83	SU-565	Vert. Size
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	1000Ω	½	P-12D	Q11-108	AG-8-S	AB-5		AM Rejection
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1		Attach to R6A
R7A	2000Ω	½	PD-9*	QJ-331†				Contrast -Tapped ◐
								1500Ω - Panel
B	500KΩ	½						Volume & Sw. - rear

§ Some models use alternate control (part #P-19-B)
¶ Some models use alternate control (part #P-18-B)
* Some models use alternate control (part #P-19-B)
• Some models use alternate control (part #PD-10-A)
† CONCENTRIKIT EQUIVALENT, KIT K-3, BASE ELEMENTS & SHAFTS B17-110X & P2-031 (Panel) B13-133 & R1-115 (Rear) & SWITCH 78-1

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CORONADO Part No.	IRC Part No.	IDENTIFICATION CODES
R8	4700Ω	½		BTS-4700	Antenna Coil Shunt
R9	4700Ω	½		BTS-4700	RF Amp. Plate
R10	4700Ω	½		BTS-4700	RF Amp. Screen
R11	100KΩ	½		BTS-100K	RF Amp. Grid
R12	1000Ω	½		BTS-1000	AGC Network
R13	100Ω	20%		BTS-100	Decoupling
R14	10KΩ	½		BTS-10K	Mixer Grid
R15	100KΩ	½		BTS-100K	Mixer Grid
R16	4700Ω	½		BTS-4700	Mixer Grid Coil Shunt
R17	10KΩ	½		BTS-10K	Mixer Plate
R18	10KΩ	½		BTS-10K	Osc. Grid
R19	4700Ω	½		BTS-4700	Osc. Plate
R20	100Ω	½	RC-101-3	BTS-100	Decoupling
R21	47Ω	½	RC-470-3	-	1st. Video IF Amp. Cathode
R22	100Ω	½	RC-101-3	BTS-100	1st. Video IF Amp. Decoupling
R23	27KΩ	½	RC-273-2	BTS-27K	2nd. Video IF Amp. Grid
R24	47Ω	½	RC-470-2		2nd. Video IF Amp. Cathode

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CORONADO Part No.	IRC Part No.	IDENTIFICATION CODES
R25	330Ω	½	RC-331-2	BTS-330	2nd. Video IF Amp. Decoupling
R26	4700Ω	½	RC-472-2	BTS-4700	3rd. Video IF Coil Shunt
R27	180Ω	½	RC-181-2	BTS-180	3rd. Video IF Amp. Cathode
R28	330Ω	½	RC-331-2	BTS-330	3rd. Video IF Amp. Decoupling
R29	100Ω	½	RC-101-2	BTS-100	Decoupling
R30	1Meg	½	RC-105-2	BTS-1Meg	AGC Network
R31	100Ω	½	RC-101-2	BTS-100	Decoupling
R32	8200Ω	½	RC-822-2	BTS-8200	Video Det. Load - See Note 1
R33	1Meg	½	RC-105-2	BTS-1Meg	AGC Network
R34	1Meg	½	RC-105-2	BTS-1Meg	Video Output Grid
R35	100Ω	½	RC-101-2	BTS-100	Video Output Cathode
R36	680Ω	½	RC-681-3	BTS-680	Contrast Control Shunt
R37	5600Ω	2	RC-562-8	BTB-5600	Video Output Plate - See Note 2
R38	220KΩ	½	RC-224-2	BTS-220K	Voltage Divider
R39	33KΩ	½	RC-333-2	BTS-33K	Voltage Divider
R40	100KΩ	½	RC-104-2	BTS-100K	Picture Tube Cathode
R41	330KΩ	½	RC-334-2	BTS-330K	Picture Tube Grid - See Note 3
R42	10KΩ	½	RC-103-2	BTS-10K	Isolation - See Note 3
R43	1Meg	½	RC-105-2	BTS-1Meg	DC Restorer Cathode
R44	1Meg	½	RC-105-2	BTS-1Meg	DC Restorer Grid
R45	270KΩ	½	RC-274-2	BTS-270K	Sound IF Amp. Grid
R46	68KΩ	½	RC-683-2	BTS-68K	Sound IF Amp. Screen
R47	15KΩ	½	RC-153-2		Sound IF Amp. Plate
R48	7500Ω	1	RC-752-5		Det.-Limiter Screen
R49	330Ω	½	RC-331-2	BTS-330	Isolation
R50	150Ω	1	RC-151-5	BTA-150	Output Cathode
R51	18KΩ	1	RC-183-5	BTA-18K	Output Screen
R52	470KΩ	½	RC-474-2	BTS-470K	Isolation
R53	1Meg	½	RC-105-2	BTS-1Meg	Sync Clipper Grid
R54	180KΩ	½	RC 184-2	BTS-180K	Sync Clipper Plate
R55	56KΩ	½	RC-563-2	BTS-56K	Voltage Divider
R56	1Meg	½	RC-105-2	BTS-1Meg	Sync Phase Inverter Grid
R57	10KΩ	½	RC-103-2	BTS-10K	Sync Phase Inverter Grid
R58	1500Ω	2	RC-152-2	BTS-1500	Sync Phase Inverter Cathode
R59	12KΩ	2	RC-123-8	BTB-12K	Sync Phase Inverter Plate
R60	2200Ω	½	RC-222-2	BTS-2200	Sync Phase Inverter Plate
R61	100KΩ	½	RC-104-2	BTS-100K	Voltage Divider
R62A	22KΩ			BTS-22K	Integrator Network
B	8200Ω		*CRP-3	BTS-8200	Integrator Network
C	8200Ω			BTS-8200	Integrator Network
R63	470KΩ	½	RC-474-2	BTS-470K	Vert. Osc. Grid
R64	220KΩ	½	RC-224-2	BTS-220K	Vert. Osc. Plate
R65	100KΩ 5%	½	RC-104-3	BTS-100K 5%	Vert. Feedback
R66	100KΩ 5%	½	RC-104-3	BTS-100K 5%	Voltage Divider
R67	10KΩ	½		BTS-10K	Vert. Peaking - See Note 4
R68	2.2Meg 5%	½	RC-225-3	BTS-2.2Meg 5%	Vert. Output Grid
R69	750Ω		RC-751-2		Vert. Output Cathode
R70	27KΩ	½	RC-273-2	BTS-27K	Horiz. Phase Det. Diode Load
R71	100KΩ	½	RC-104-2	BTS-100K	Horiz. Phase Det. Diode Load
R72	100KΩ	½	RC-104-2	BTS-100K	Horiz. Phase Det. Diode Load
R73	4.7Meg	½	RC-475-2	BTS-4.7Meg	Horiz. Phase Det. Diode Load
R74	18KΩ	2	RC-183-8	BTB-18K	Horiz. Feedback
R75	470KΩ	½	RC-474-2	BTS-470K	Horiz. AFC Filter
R76	470KΩ	½	RC-474-2	BTS-470K	Horiz. MV Plate
R77	2200Ω	½	RC-222-2	BTS-2200	Horiz. MV Cathode
R78	68KΩ	½	RC-683-2	BTS-68K	Horiz. MV Grid
R79	270KΩ	½	RC-274-2	BTS-470K	Horiz. MV Plate
R80	5600Ω	½	RC-562-2	BTS-5600	Horiz. Blanking
R81	18KΩ	1	RC-183-5	BTA-18K	Decoupling
R82	68Ω	½	RC-680-2		Parasitic Suppressor
R83	680KΩ	½	RC-684-2	BTS-680K	Horiz. Output Grid
R84	22Ω	½	RC-220-2	BW-1-22	Horiz. Output Cathode
R85	8200Ω	3	RC-822-8		Horiz. Output Screen
R86	3.3Ω	½	RC-33G-2		HV Rectifier Filament
R87	680KΩ	1	RC-684-5		HV Filter
R88	2200Ω	10	RW-222-17	1 3/4A-2250	Voltage Divider - Wire Wound
R89	470KΩ	½	RC-474-3	BTS-470K	Det. - Limiter Plate
R90	3000Ω	10	RW-302-17	1 3/4A-3000	Output Decoupling - Wire Wound
R91	150Ω 5%	½	RC-151-3	BTS-150 5%	Filament Dropping
R92	4.7Ω 5%	10	RW-47G-15		Surge Limiter - Wire Wound
R93	220KΩ	2	RC-224-8	BTB-220K	Line Isolation

Note 1. Some models use a 6800Ω resistor in this application.
Note 3. Some models use a 8200Ω resistor in this application.
Note 3. Some models use a 22KΩ resistor in this application.
Note 4. Some models use a 5600Ω or 8200Ω resistor in this application.
• Items R62A, R62B, R62C, C63A, C63B, C63C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: CORONADO Part No.	STANCOR Part No.	MERIT Part No.	CHICAGO Part No.	TRIAD Part No
T1	117VAC	6.3VAC			T-122B	P-8466	P-3947	FO-63 ①	
	② 27A	② 3.8A			T-122A				

① Alternate transformer
② Drill one new mtg. hole.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: CORONADO Part No.	STANCOR Part No.	MERIT Part No.	CHICAGO Part No.	TRIAD Part No.	NOTES
T2	410Ω	23Ω Tap ① 12Ω ② 17.7Ω SEC. 2 70Ω	T-124-B	A-8130	HVO-7			Horiz. Output Trans.
	Tap ① 41Ω		T-124-A ③					
T3	720Ω	14Ω	T-116	A-8113 ②	A-3038	TSO-2 ②	A-98X	Vert. Output Trans.
			T-116-A ④					
			DY-12-M	DY-9	MDF-70	TY-2	Y-17	Horiz. Deflection Coils
T4A	22Ω							Vert. Deflection Coils
B	52Ω							

② Drill one new mtg. hole.
③ Alternate horiz. output trans.
④ Alternate vert. output trans.

PARTS LIST CONTINUED ON PAGE 15

PROPERTY OF
F. SHIP
3024 MEADE ST.
DENVER, COLORADO

CORONADO MODELS K-21 (43-9041), K-72 (43-9031), K-73L (43-9030)

PROPERTY OF
F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T5	4.3	3.5Ω	295Ω	.65Ω	T-123	A-3877	A-2930	RO-302	S-3X	

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.200A	66Ω	2 Hy.	LC-9	C-2325	C-2996	TR-1733 ②	C-17X

② Drill one new mtg. hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	CORONADO PART No.	MERIT PART No.	
L2	Ant. Trans.	0Ω	0Ω	TLA-4		
L3	Ant. Coils	0Ω		TRW-1		
L4	RF Choke	0Ω				Part of C12
L5	RF Coils	0Ω		TRW-1		
L6	Mixer Grid Coils	0Ω		TRW-1		
L7	Osc. Coils	0Ω		TOW-1		
L8	1st. Video IF	.4Ω		TLP-1		
L9	Fil. Choke	0Ω		LC-10		
L10	RF Choke	3Ω		LC-19		
L11	Fil. Choke	0Ω		LC-1		
L12	2nd. Video IF	.1Ω		LV-6	TV-102	
L13	Fil. Choke	0Ω		LC-1		
L14	3rd. Video IF	.2Ω	.2Ω	LV-7		
L15	4th. Video IF	.4Ω	.4Ω	LV-8		
L16	Peaking Coil	8.4Ω		LP-11	*TV-184	Wound on 10KΩ resistor -orange dot
L17	Peaking Coil	13.5Ω		LP-10		Purple dot
L18	Sound Take-Off Coil	2.9Ω	2.9Ω	LTO-3		
L19	Peaking Coil	8Ω		LP-13		Wound on 12KΩ resistor - white dot
L20	Peaking Coil	10Ω		LP-12-A	TV-188	Green and black dot - 450 microhenries
L21	4.5MC Sound IF	1.9Ω		LIF-11		
L22	4.5MC Quadrature Coil	22Ω		LIF-8-C		
L23	Horiz. Osc. Coil	50Ω		LHO-2-E		14.4 Microhenries - 60 Microhenries
L24	Width Coil	28Ω	28Ω	L-M77J4-3	MWC-1	
L25	Horiz. Lin.	27Ω		LM77J4	MWC-1	

* Parallel with 10KΩ resistor

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	CORONADO PART No.	VIKING PART No.	QUAM PART No.	
SP1	4"X 6"	PM	3.2Ω		46J6	46A07	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT	CORONADO PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	
M1	.255A	SR-300		6Q4	1090A	6S300	
M2	.255A	SR-300		6Q4	1090A	6S300	

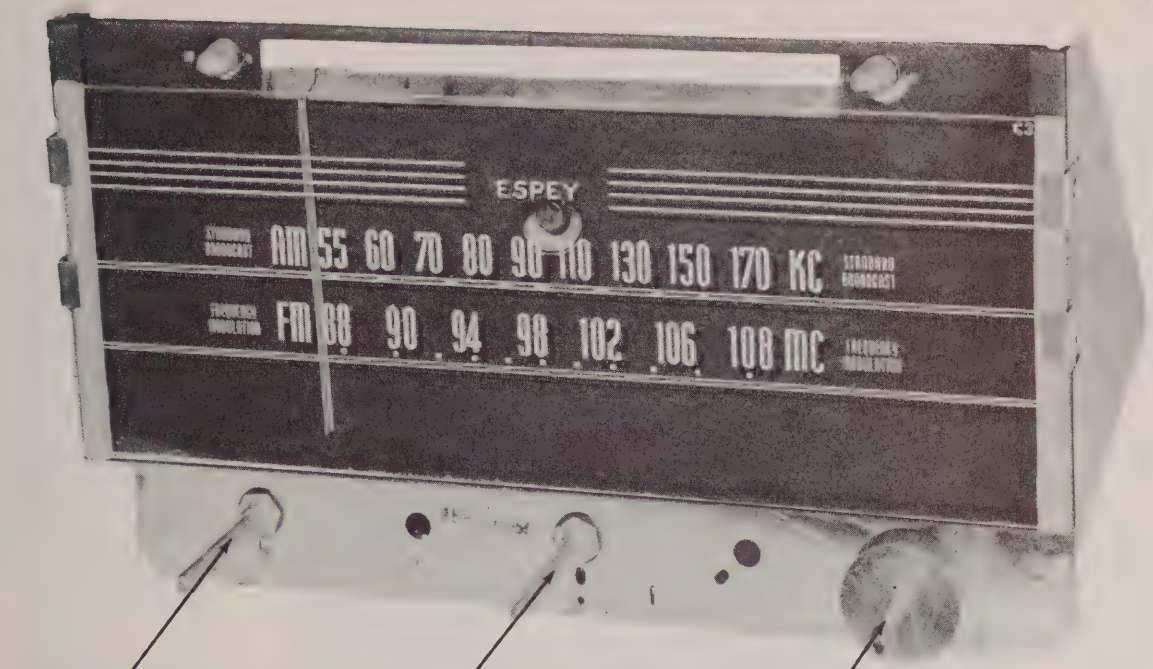
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			CORONADO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	3 AG Slo-Blo Pigtail	1½ A. 125 V.	FE-4		31501.5		MDV 1½	
M4	3 AG Pigtail	½ A. 250 V.	FE-5		318.500		GJV ½	

MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M5	RF Tuning	TT-7	
M6	Crystal	1N64	1N64
M7A	Focus Magnet	LF-7	
B	Focus Magnet	LF-8	
M8A	Ion Trap	1T-1A	
B	Ion Trap	1T-5	
B2	Trimmer	CT-6	Horiz. Drive (28-280MMF) or (40-300MMF)

PROPERTY OF
L. F. BLANKE
3924 MEADE ST.
DENVER, COLORADO



ESPEY
MODEL 512B

TRADE NAME	Espey Model 512B
MANUFACTURER	Espey Manufacturing Co, Inc., 528 E. 72nd St., New York, N.Y.
TYPE SET	AC Operated AM-FM Superheterodyne Tuner For Custom Installation
TUBES (Twelve)	Types 6BA6 FM RF Amp., 6BE6 FM Mixer, 6C4 FM Osc., 6BA6 AM RF Amp., 6BE6 AM Conv., 6SG7 FM-AM IF Amp., 6SH7 2nd. FM IF Amp., 6AL5 FM Ratio Det., 6SQ7 AM Det.-AVC-AF Amp., 6E5 or 6U5 Tuning Ind., 6SL7GT Phono Pre-Amp., 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC RATING .710 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	535-1720 KC FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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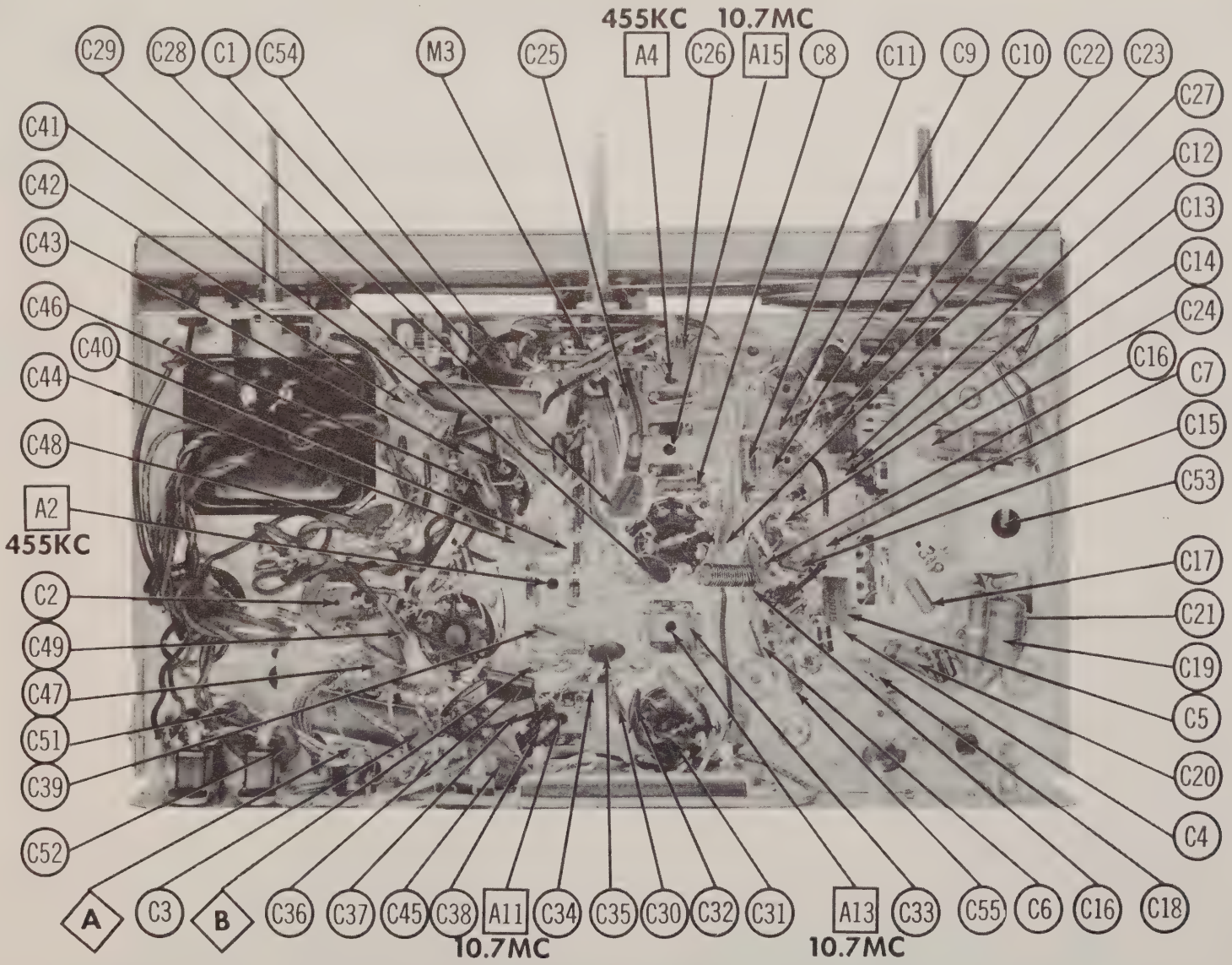
455KC
10.7MC
C29
C28
C1
C54
M3
C25
A4
C26
A15
C8
C11
C9
C10
C22
C23
C27
C12
C13
C14
C24
C16
C7
C15
C53
C17
C21
C19
C5
C20
C4
C41
C42
C43
C46
C40
C44
C48
A2
455KC
C2
C49
C47
C51
C39
C52
A
C3
B
C36
C37
C45
C38
A11
10.7MC
C34
C35
C30
C32
C31
A13
10.7MC
C33
C55
C6
C16
C18

PROPERTY OF
BLANKENSHIP

ESPEY
MODEL 512B

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ESPEY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	FM RF Amplifier	6BA6	6BA6	7BK	
V2	FM Mixer	6BE6	6BE6	7CH	
V3	FM Oscillator	6C4	6C4	6BG	
V4	AM RF Amplifier	6BA6	6BA6	7BK	
V5	AM Converter	6BE6	6BE6	7CH	
V6	FM AM IF Amp.	6SG7	6SG7	8BK	
V7	FM IF Amplifier	6SH7	6SH7	8BK	
V8	Ratio Detector	6AL5	6AL5	6BT	
V9	Det. -AVC-AF Amp	6SQ7	6SQ7	8Q	
V10A	Tuning Ind.	6E5	6E5	6R	
B	Tuning Ind.	6U5	6U5	6R	
V11	Phono Pre-Amp.	6SL7GT	6SL7GT	8BD	
V12	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ESPEY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■40	450		AFH3-43		UPT44145		FP376.8	TVL-3785	
B	▬40	450								
C	10	450								
C2A	▲15	450		AFH2-49		UP15D45		FP234	TVL-2755	Note 2
B	▲15	350								Note 3
C3	5	250		PRS250/4		BR425		TC50X	TVA-1501	
C4	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C5A	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
B	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C6	500			SI500	D6-501	TM5T5	GP2K-501	UC-531	5GA-T5	
C7	45									
C8	2000			SI2000	D6-202	TM5D2	GP2-333-202	UC-522	5HK-D2	
C9	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C10	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C11	500			SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	
C12	2						NP0K-020			
C13	40						NP0K-400			
C14	20						N150K-200			
C15	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C16	500			SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	
C17	500			SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	
C18	1000			SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	Note 4
C19	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C20	.02	200		P488-02	DF-203	PJ2S2		PT412	2TM-S2	
C21	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C22	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C23	100	500		1468-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C24	20			SI20NP0	TCZ-20		NP0K-200	ZT-542		
C25	1500			SI1500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C26	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C27	10000			BPD-01	DD-103	TM5S1	821-01	DC-521	5HK-S1	
C28	10000			BPD-01	DD-103	TM5S1	821-01	DC-521	5HK-S1	
C29	5000			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C30	2000			SI2000	D6-202	TM5D2	GP2-333-202	UC-522	5HK-D2	
C31	5000			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C32	5000			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C33	2000			SI2000	D6-202	TM5D2	GP2-333-202	UC-522	5HK-D2	
C34	2000			SI2000	D6-202	TM5D2	GP2-333-202	UC-522	5HK-D2	
C35	5000			BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	Note 1
C36	220	500		1468-00025	D6-221	5W5T25	GP2K-221	MC240	1FM-325	
C37	220	500		1468-00025	D6-221	5W5T25	GP2K-221	MC240	1FM-325	
C38	220	500		1468-00025	D6-221	5W5T25	GP2K-221	MC240	1FM-325	
C39	1000			SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C40A	100			SI100	♦PC-50	TM5T1	GP1K-101	UC-531	♦100C1	
B	100			SI100		TM5T1	GP1K-101	UC-531		

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ESPEY PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R20	68Ω	1/2			1st. IF Amp. Cathode
R21	2000Ω	1/2			1st. IF Amp. Decoupling
R22	2.2Meg	1/2		BTS-2.2Meg	AVC Network
R23	2.2Meg	1/2		BTS-2.2Meg	AVC Network
R24	50KΩ	1/2	♦		Diode RF Filter
R25	470KΩ	1/2		BTS-470K	Diode Load
R26	470KΩ	1/2		BTS-470K	AVC Network
R27	220KΩ	1/2		BTS-220K	2nd. IF Amp. Grid
R28	68Ω	1/2			2nd. IF Amp. Cathode
R29	22KΩ	1		BTA-22K	2nd. IF Amp. Screen
R30	1000Ω	1/2		BTS-1000	2nd. IF Amp. Plate Decoupling
R31	47KΩ	1		BTA-47K	Voltage Divider
R32	68Ω	1/2			Balancing
R33	1500Ω	1/2		BTS-1500	Balancing
R34	1000Ω	1/2		BTS-1000	Balancing
R35	6800Ω	1/2		BTS-6800	Ratio Det. Diode Load
R36	6800Ω	1/2		BTS-6800	Ratio Det. Diode Load
R37	220KΩ	1/2		BTS-220K	AVC Network
R38	68KΩ	1		BTA-68K	De-Emphasis
R39	10Meg	1/2		BTS-10Meg	AF Amp. Grid
R40	220KΩ	1/2		BTS-220K	AF Amp. Plate
R41	470KΩ	1/2		BTS-470K	Tone Compensation
R42	1Meg	1/2		BTS-1Meg	Tuning Eye Plate
R43	1Meg	1/2		BTS-1Meg	Tuning Eye Grid - See Note 10
R44	3.3Meg	1/2		BTS-3.3Meg	Tuning Eye Grid Filter - See Note 10
R45	6800Ω	1/2		BTS-6800	Phono Shunt
R46	3.3Meg	1/2		BTS-3.3Meg	Phono Amp. Grid
R47	82KΩ	1/2		BTS-82K	Phono Amp. Plate - See Note 7
R48	82KΩ	1/2		BTS-82K	Phono Amp. Plate Decoupling - See Note 7
R49	27KΩ	1/2		BTS-27K	Tone Compensation
R50	220KΩ	1/2		BTS-220K	Tone Compensation - See Note 8
R51	220KΩ	1/2		BTS-220K	Tone Compensation
R52	220KΩ	1/2		BTS-220K	Phono Amp. Grid
R53	2200Ω	1/2		BTS-2200	Phono Amp. Cathode
R54	33KΩ	1/2		BTS-33K	Phono Amp. Plate
R55	12Ω	1/2			Filament Dropping - See Note 9
R56	12Ω	1/2			Filament Dropping - See Note 3
R57	47KΩ	1/2		BTS-47K	Decoupling
R58	1000Ω	15		2D-1000	Filter - Wire Wound

Note 1. Some models use a 470KΩ resistor in this application
Note 2. Some models use a 22KΩ resistor in this application
Note 3. Not used in all models.
Note 4. Some models use a 150Ω resistor in this application
Note 5. Some models use a 1000Ω resistor in this application
Note 6. Some models use a 100Ω resistor in this application
Note 7. Some models use a 68KΩ resistor in this application
Note 8. Some models use a 180KΩ resistor in this application
Note 9. Some models use a 8Ω resistor in this application
Note 10. Used only when V10 is a 6E5.
♦ Items R24, C40A, C40B are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: ESPEY PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.
T1	117VAC @ .71A	610VCT .085ADC	5VAC @ 2A	6.3VAC @ 3.2A	B-18078	PM-8409 ①	P-2952 ①	PH-120 ②	R-9B

① Add series resistor to reduce plate voltage
② Drill new mtg. holes

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ESPEY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C41	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C42	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C43	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C44	220	500		1468-00025	D6-221	5W5T25	GP2K-221	MC240	1FM-325	
C45	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	Note 5
C46	2000			SI2000	D6-202	TM5D2	GP2-333-202	UC-522	5HK-D2	
C47	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C48	10000			BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C49	10000			BPD-01	DD-103	TM5S1	821-01	DC-511	5HK-S1	
C50	500			SI500	D6-501	TM5T1	GP2K-501	UC-535	5GA-T5	Note 1
C51	.05	400		P488-05		PTE4S5		PT415	4TM-S5	
C52	.05	400		P488-05		PTE4S5		PT415	4TM-S5	
C53	5			SI5	TCZ-4.7		GP1K-050	ZT-555	5TCUB-V5	
C54	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	Note 1
C55	2000			SI2000	D6-202	TM5D2	GP2-333-202	UC-522	5HK-D2	Note 1

♦ Items C40A, C40B, R24 are combined in one unit.
Note 1. Not used in all models.
Note 2. Some models use 10MFD in this application
Note 3. Some models use 20MFD in this application
Note 4. Some models use 3000MMF in this application
Note 5. Some models use .01MFD in this application

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ESPEY PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	A-9.130	Q13-133	AG-60-Z	B-60-S	U-48	Volume - See Note
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

Note: Some models use alternate control (Part #N9.130)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	ESPEY PART No.	IRC PART No.	
R2	350KΩ	½			FM RF Amp. Grid - See Note 1
R3	68Ω	½			FM RF Amp. Cathode
R4	47KΩ	½		BTS-47K	FM RF Amp. Screen-See Note 2
R5	47KΩ	½		BTS-47K	FM RF Amp. Screen-See Note 3
R6	22KΩ	½		BTS-22K	FM Mixer Inj. Grid
R7	120Ω	½		BTS-120	FM Mixer Cathode-See Note 4
R8	15KΩ	2		BTB-15K	FM Mixer Screen
R9	47KΩ	½		BTS-47K	FM Osc. Grid
R10	1000Ω	½		BTS-1000	FM Osc. Plate
R11	850Ω	½			Antenna Loading - See Note 5
R12	350KΩ	½			AM RF Amp. Grid - See Note 1
R13	200Ω	½			AM RF Amp. Cathode - See Note 6
R14	200Ω	½			AM RF Amp. Cathode - See Note 3
R15	22KΩ	1		BTA-22K	AM RF Amp. Screen
R16	180Ω	½			Parasitic Suppressor - See Note 4
R17	27KΩ	½		BTS-27K	AM Osc. Grid - See Note 2
R18	15KΩ	2		BTB-15K	AM Osc. Anode
R19	850Ω	½			FM Mixer Plate Decoupling - See Note 35

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	ESPEY PART No.	MERIT PART No.	
L1	FM Ant. Coil	0Ω		N2.411		
L2	Fil. Choke	0Ω		N2.416		
L3	RF Choke	.9Ω		A2.402		
L4	FM RF Coil	0Ω		N2.412		
L5	FM Osc. Coil	0Ω		N2.413		
L6	Fil. Choke	0Ω		N2.416		
L7	AM Loop Ant.	.6Ω		C5.027		
L8	AM Ant. Loading Coil	1.6Ω		B2.423		
L9	AM RF Coil	95Ω	2.3Ω	B2.409		
L10	AM Osc. Coil	.6Ω	6.4Ω	2.410		
L11	1st. AM IF	9.2Ω	9.2Ω	N2.414	BC-352	
L12	1st. FM IF	.6Ω	.6Ω	N2.415	FM-254	
L13	Fil. Choke	.1Ω		N2.439		
L14	2nd. FM IF	.6Ω	.6Ω	N2.415	FM254	
L15	2nd. AM IF	9.2Ω	9.2Ω	N2.414	BC-353	
L16	Ratio Det.	1.6Ω	.8Ω	C2.274		Tertiary Winding .4Ω

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					ESPEY PART No.		
M1	Bayonet	6-8	.25	Blue			Type #47
M2	Bayonet	6-8	.25	Blue			Type #47

MISCELLANEOUS

ITEM No.	PART NAME	ESPEY PART No.	NOTES
M3	Switch	A12.012	Bandswitch
M4	Switch		Phono Gain
M5	3 Gang Var. Cap.	B6.070	AM Sections (40-537MMF, 40-533MMF, 24-517MMF)
A6	Trimmer	C13518.	AM Osc. Padder (500-1000MMF)
A17	Trimmer	N20.022	FM Osc. Adj. (1-8MMF)
A19	Trimmer	N20.022	FM RF Adj. (1-8MMF)

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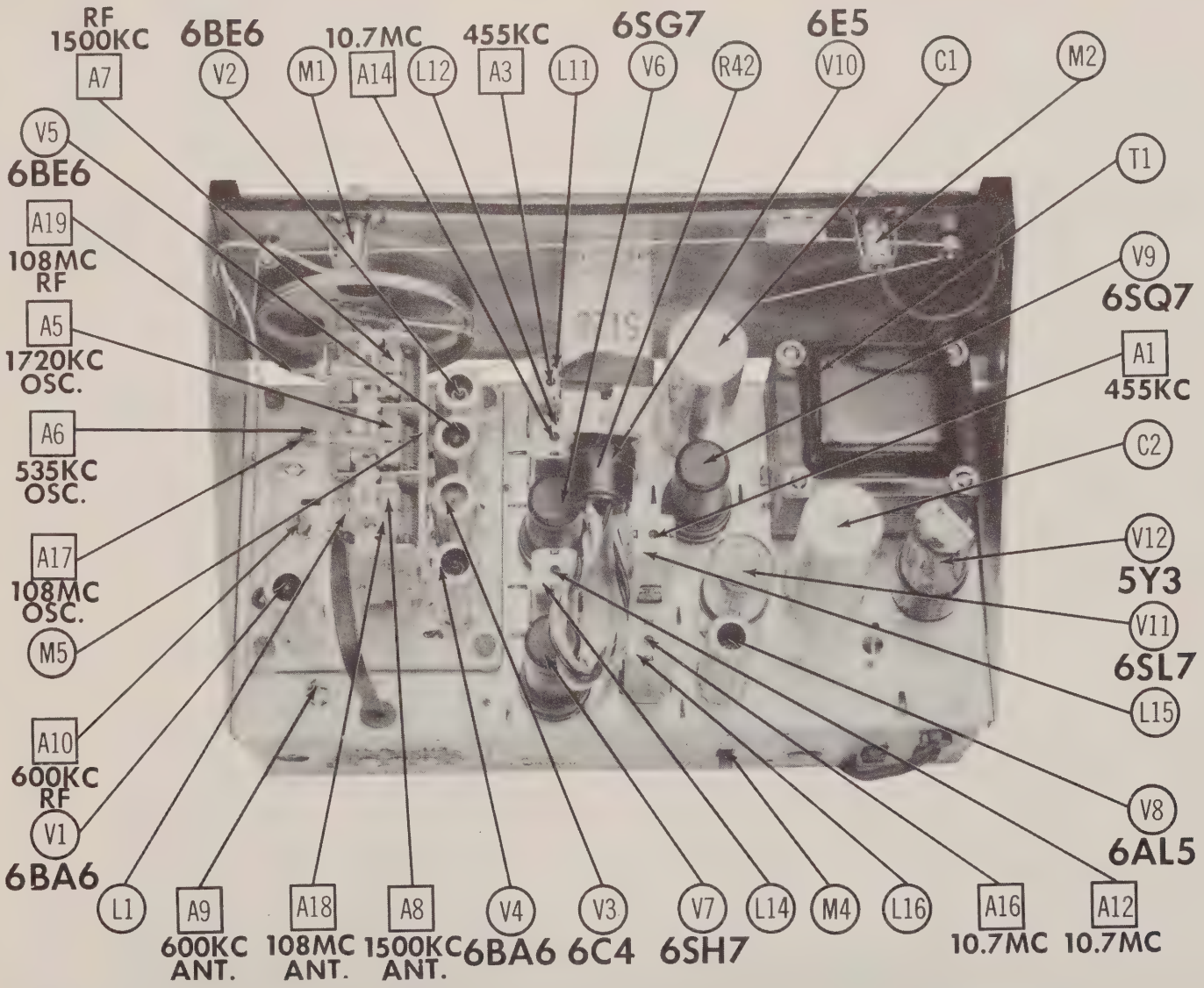
RF
1500KC
A7
6BE6
V2
M1
10.7MC
A14
L12
455KC
A3
L11
6SG7
V6
R42
6E5
V10
C1
M2
V5
6BE6
T1
A19
108MC
RF
V9
6SQ7
A5
1720KC
OSC.
A1
455KC
A6
535KC
OSC.
C2
V12
5Y3
A17
108MC
OSC.
V11
6SL7
M5
L15
A10
600KC
RF
V8
6AL5
V1
6BA6
L1
A9
600KC
ANT.
A18
108MC
ANT.
A8
1500KC
ANT.
V4
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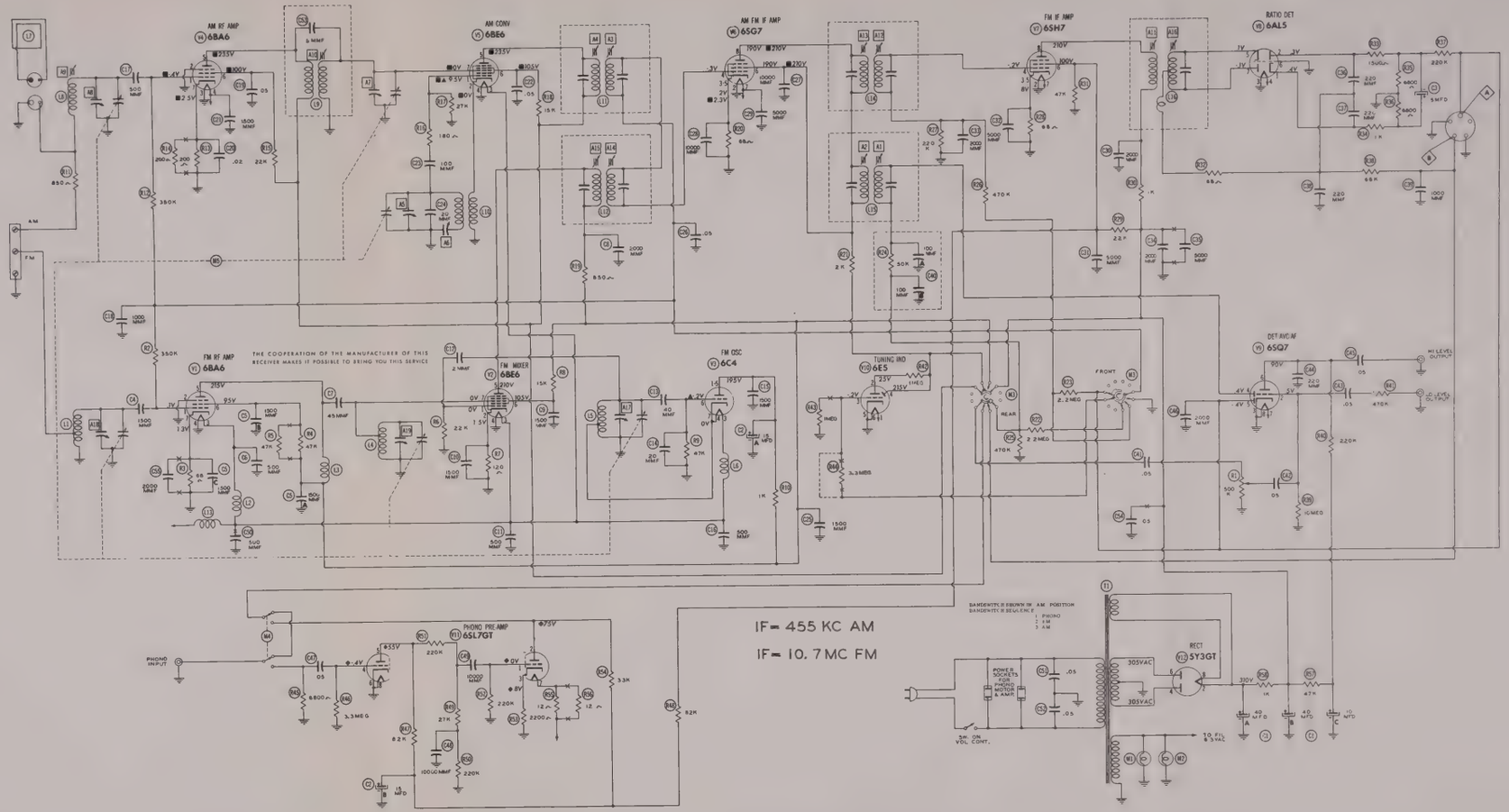
V7
6SH7
L14
M4
L16
A16
10.7MC
A12
10.7MC



1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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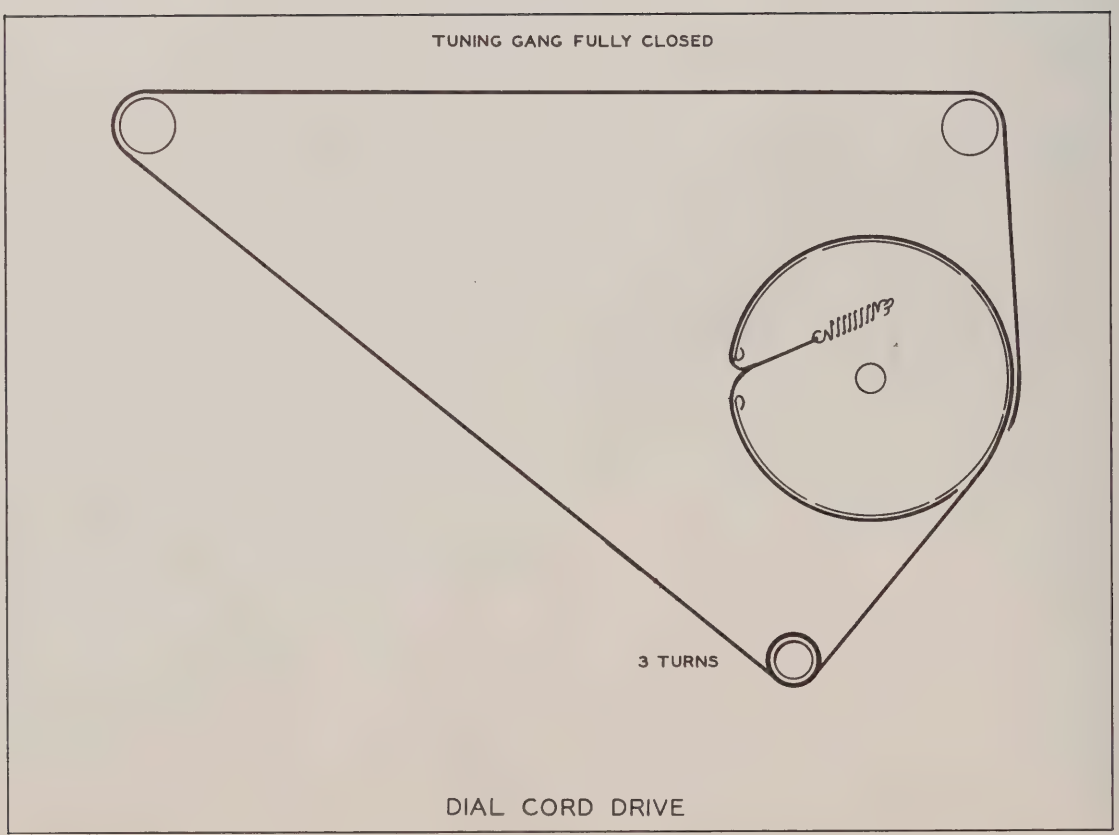
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	900KΩ	0Ω	.1Ω	0Ω	†1KΩ	†25KΩ	68Ω	
V 2	6BE6	22KΩ	120Ω	.1Ω	0Ω	†1. 8KΩ	†16KΩ	0Ω	
V 3	6C4	†2KΩ	INF	.1Ω	0Ω	†2KΩ	47KΩ	0Ω	
V 4	6BA6	■1. 9Meg	0Ω	0Ω	.1Ω	■†1KΩ	■†23KΩ	100Ω	
V 5	6BE6	27KΩ	.6Ω	.1Ω	0Ω	■†1KΩ	■16KΩ	2. 3Ω	
V 6	6SG7	0Ω	0Ω	68Ω	550KΩ ■1. 5Meg	68Ω	†2KΩ	.1Ω	†2KΩ
V 7	6SH7	0Ω	0Ω	68Ω	220KΩ	68Ω	†18KΩ	.1Ω	†2KΩ
V 8	6AL5	7. 8KΩ	8. 3KΩ	0Ω	.1Ω	INF	0Ω	INF	
V 9	6SQ7	0Ω	10Meg	0Ω	520KΩ	220KΩ	†270KΩ	.1Ω	0Ω
V 10	6E5	.1Ω	†1Meg	750KΩ ■800KΩ	†1KΩ	0Ω	0Ω		
V 11	6SL7GT	220KΩ	80KΩ	2. 2KΩ	3. 3Meg	110KΩ	0Ω	2. 4Ω	0Ω
V 12	5Y3GT	0Ω	50KΩ	INF	115Ω	INF	110Ω	†20KΩ	50KΩ

ALL MEASUREMENTS TAKEN IN FM POSITION UNLESS NOTED
† MEASURED FROM PIN 2 OF V12
■ MEASURED IN "AM" POSITION



DIAL CORD DRIVE

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
The output of the tuner should be connected to an audio amplifier during alignment.

AM ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 4 (grid) of 6SG7, (V6). Low side to chassis.	455 KC (400∿ Mod.)	AM	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output.
2.	"	High side to pin 7 (grid) of 6BE6 (V5). Low side to chassis.	"	"	"	"	A3, A4	"
3.	50MMF	High side thru 50MMF to AM antenna terminal. Low side to chassis.	1720 KC	"	"	"	A5	"
4.	"	"	535 KC	"	Tuning gang fully closed	"	A6	Adjust for maximum output. Repeat step 3.
5.	"	"	1500 KC	"	Tune in 1500 KC signal	"	A7, A8	Adjust for maximum output.
6.	"	"	600 KC	"	Tune in 600 KC signal	"	A9, A10	Adjust for maximum output. Repeat step 5.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD	High side to pin 4 (grid) of 6SG7 (V6). Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference.	DC probe to point (A). Common to chassis.	A11, A12 A13	Adjust for maximum deflection.
8.	"	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	"	"	"	"	A14, A15	"
9.	"	"	"	"	"	DC probe to point (B). Common to chassis.	A16	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	SCOPE CONNECT	ADJUST	REMARKS
7.	.01MFD	High side to pin 4 (grid) of 6SG7 (V6). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point (A). Low side to Chassis.	A11, A12	Disconnect stabilizer capacitor C3. Adjust for curve of maximum amplitude and symmetry as per fig. 1.
8.	"	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	"	"	"	"	A14, A15	"
9.	"	"	"	"	"	Vert. amp. to Point (B). Low side to chassis.	A16	Reconnect stabilizer capacitor C3. Adjust so that 10.7MC occurs at center of crossover lines as per fig. 2. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines.

FM OSCILLATOR AND RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
10.	270Ω Carbon Resistor	High side thru 270Ω to FM (Middle) antenna terminal. Low side to chassis.	108.5MC (Unmod.)	FM	Tuning gang fully open	DC probe to point (A). Common to chassis.	A17	Adjust for maximum deflection. Attenuate generator output to maintain 1.5 volts or less at point (A).
11.	"	"	87.5MC	"	Tuning gang fully closed	"	L5	Compress or expand coil, if necessary for maximum deflection. Repeat steps 10 and 11 until no further improvement is noted.
12.	"	"	108 MC	"	Tune in 108 MC signal	"	A18, A19	Adjust for maximum deflection.
13.	"	"	88 MC	"	Tune in 88 MC signal	"	L8, L4	Check coils with tuning wand for tracking. If necessary compress or expand coils slightly for maximum deflection on VTVM. Repeat steps 12 and 13 if necessary.

FIG. 1

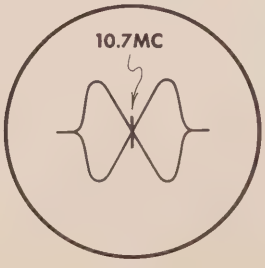


FIG. 2

FIRESTONE MODELS 13-G-110A, 13-G-115, 13-G-116, 13-G-119, 13-G-120 (Code 334-2-MS31CA)

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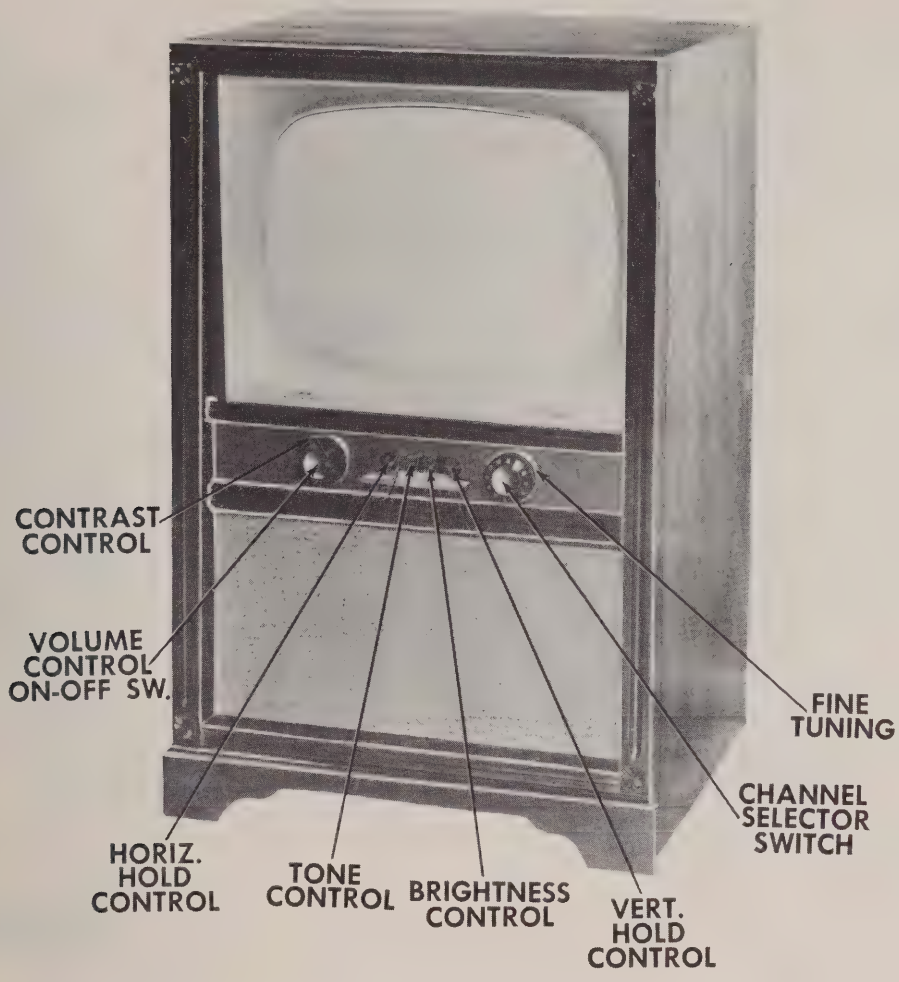

FIRESTONE 13-G-110A

TRADE NAME	Firestone Models 13-G-110A, 13-G-115, 13-G-116, 13-G-119, 13-G-120(Code 334-2-MS31CA)
SUPPLIER	Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, Ohio
TYPE SET	Television Receiver
TUBES	Twenty-three
POWER SUPPLY	110-120 Volts AC-60Cycle
RATING	1.82 Amp. @ 117 Volts AC
TUNING RANGE—CHANNELS	2 thru 13

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FIRESTONE MODELS 13-G-110A, 13-G-115, 13-G-116, 13-G-119, 13-G-120 (Code 334-2-MS31CA)

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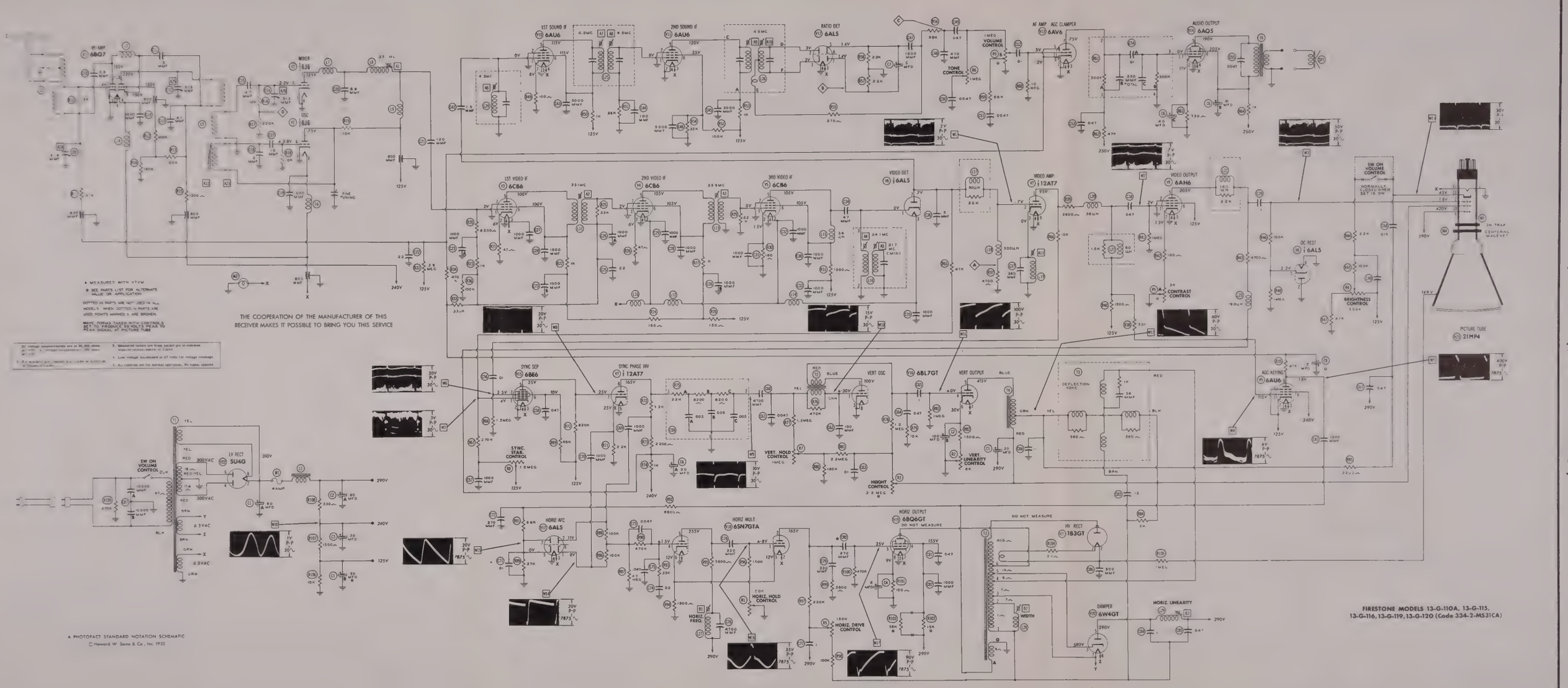

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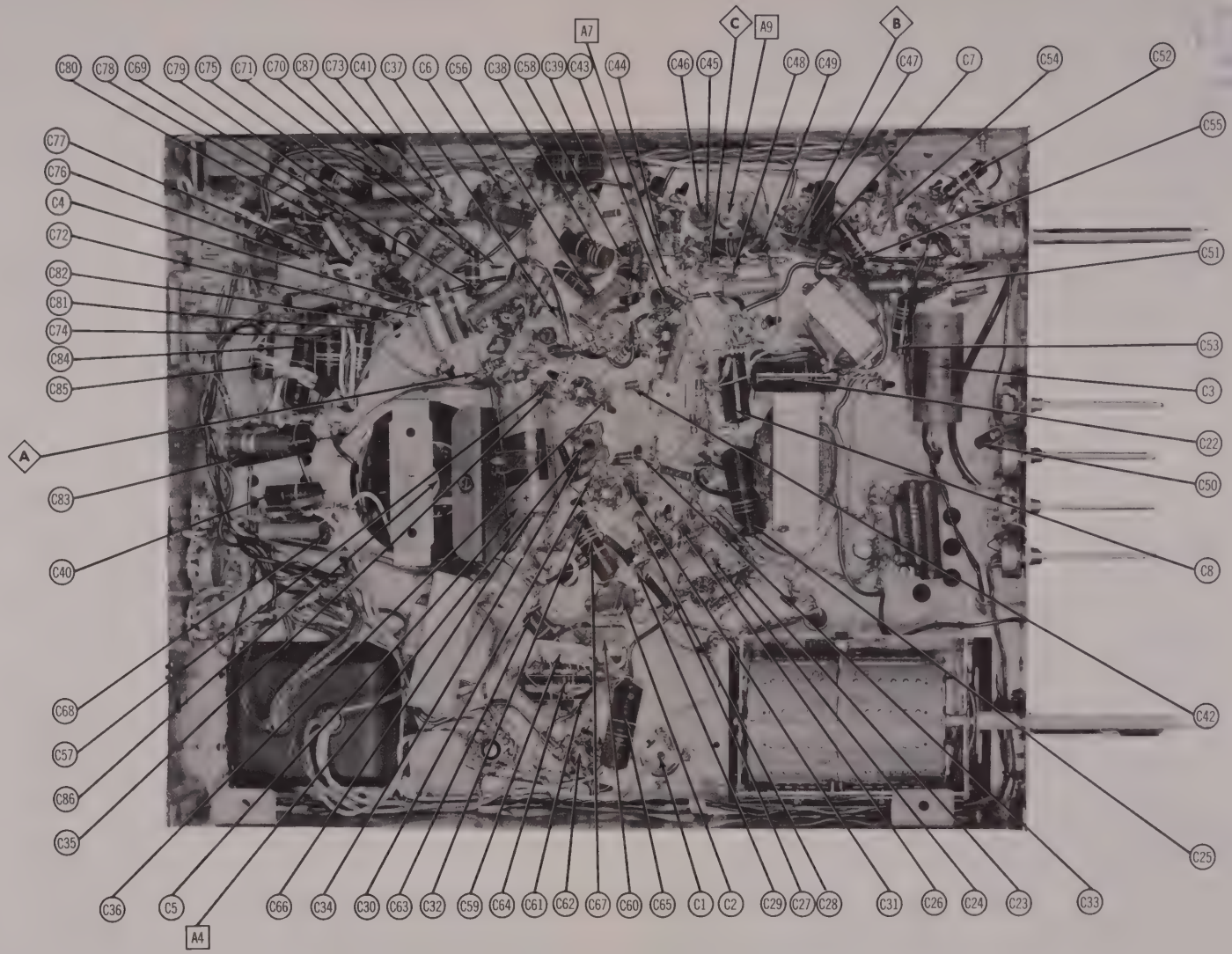
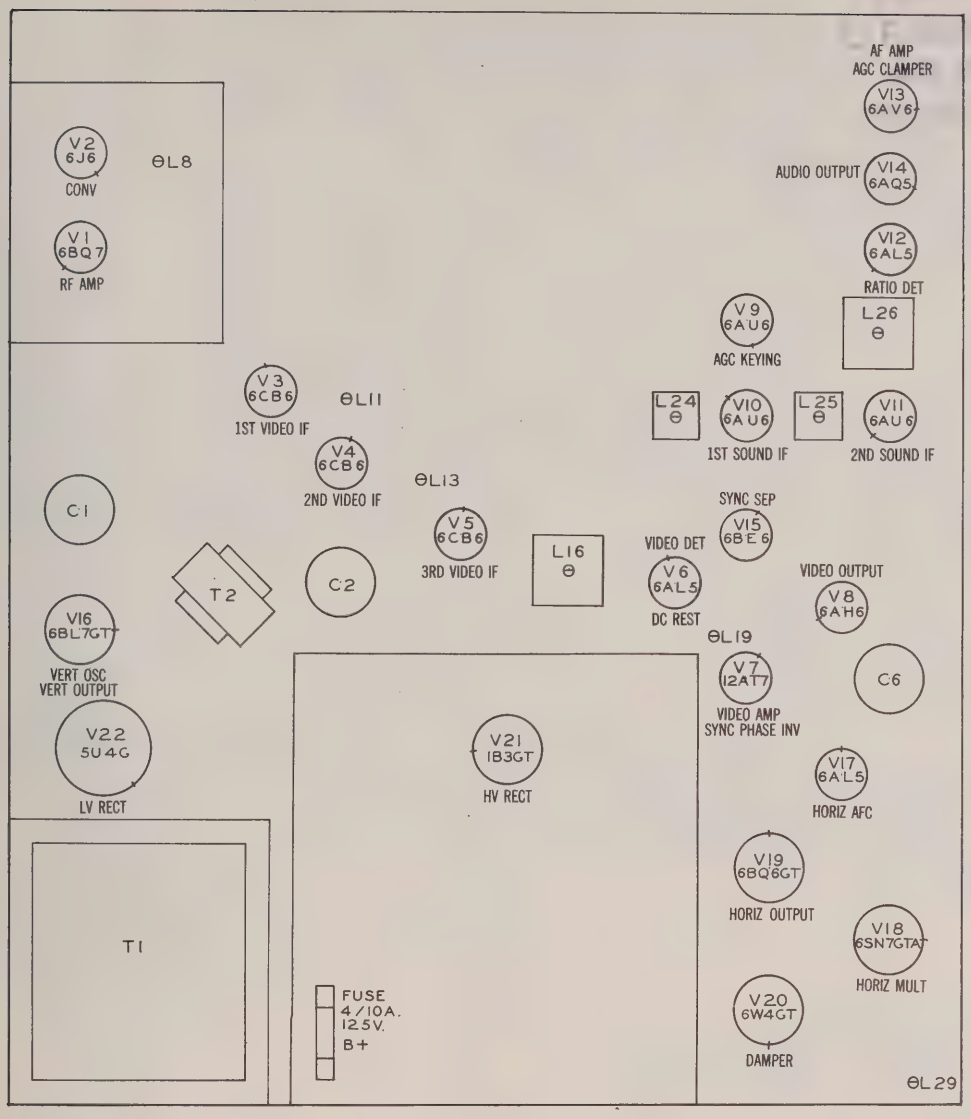
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW- CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TOP VIEW

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-V22, Fuse(M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V6
No pic, no sound, has snow-V1, V2, V3
No pid, has sound, has raster-V6, V7, V8, V23
Has pic, ho sound-V10, V11, V12, V13, V14
Overloaded picture-V9, V13

SYNC FAILURE
No vert. sync.-V7, V16
No horiz. sync.-V7, V17, V18
No vert. or horiz. sync. V7, V15

SWEEP FAILURE
No raster, has sound-V18, V19, V20, V21, V23
No vertical deflection-V16
Poor vert. linearity or foldover-V16
Poor horiz. linearity or foldover-V18, V19, V20
Narrow picture-V18, V19, V20, V21, V22
Vert. off freq. -V7, V16
Horiz. off freq.-V7, V17, V18

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal multivibrator tube, V18.

VIDEO IF ALIGNMENT

Remove the converter tube, V2 and replace with a 6J6 which as pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C25. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, V2. Low side to chassis.	25.1MC (Unmod)	Any	DC probe to point (A) Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	23.1MC	"	"	A2	"
3.	"	"	25.9MC	"	"	A3	"
4.	"	"	24.1MC	"	"	A4	"
5.	"	"	21.7MC	"	"	A5	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, V2. Low side to chassis.	24MC (10MC Swp)	21.7MC 23MC 23.5MC 25.25MC 26.2MC	Any	Vert. amp. to point (A). Low side to chassis.		Check for response curve similar to fig.1 If necessary retouch A1 through A4 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD	High side to pin 1, (cathode) of 6AL5 (V6) Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B) Common to chassis.	A6, A7, A8, A9	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to point (C) Common to chassis.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to pin 1 (Cathode) of 6AL5 (V6). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp. to point (B). Low side to chassis.	A6, A7, A8, A9	Disconnect stabilizer capacitor C7. Adjust for curve of maximum amplitude and symmetry as in fig. 2.
8.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A10	Reconnect capacitor C7. Adjust so that 4.5MC occurs at center of crossover lines as in fig. 3. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ADJUSTMENT

Turn contrast control to maximum clockwise position.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to pin 7 of 6AL5 (V12).	Not used	4.5MC (400∿Mod.)	Any	Vert. amp. to pin 2 of picture tube.	A11	Adjust for MINIMUM 400∿ indication on scope.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The oscillator adjustment screws for each channel are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. to point (A). Low side to chassis.	A12	Adjust to place sound marker in notch as in fig. 4. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A13	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A14	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A15	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A16	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A17	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A18	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A19	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A20	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A21	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A22	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A23	

ALIGNMENT INSTRUCTIONS (CONT.)

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RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to point ◇D◇. Low side to chassis.	A24, A25 A26	Adjust for response curve similar to fig. 5. with markers above 90%.
12.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to fig. 5. If markers fall below 70% on any channel make slight compromise adjustments of A24, A25 and A26 with channel switch set that channel, Recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

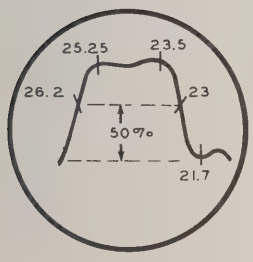


FIG. 1

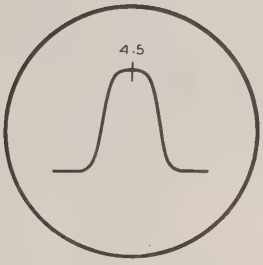


FIG. 2

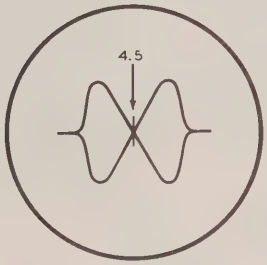


FIG. 3

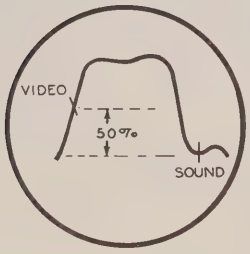


FIG.4

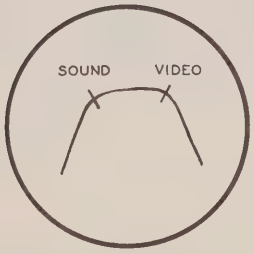
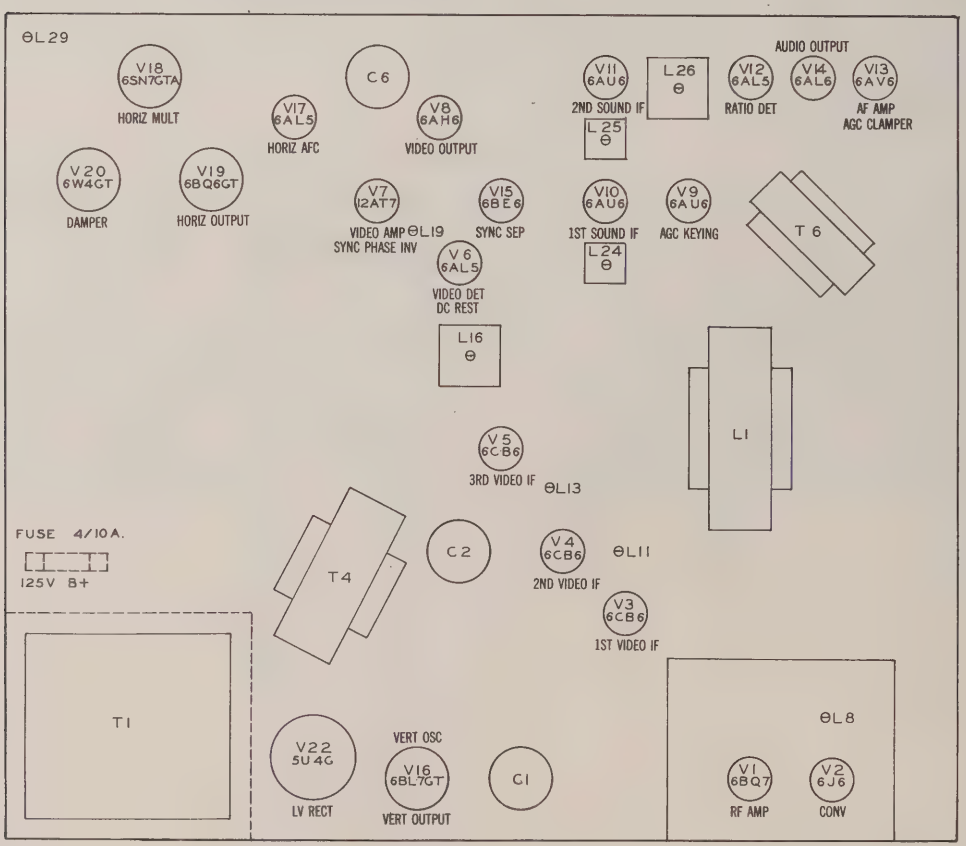


FIG 5

RESISTANCE MEASUREMENTS

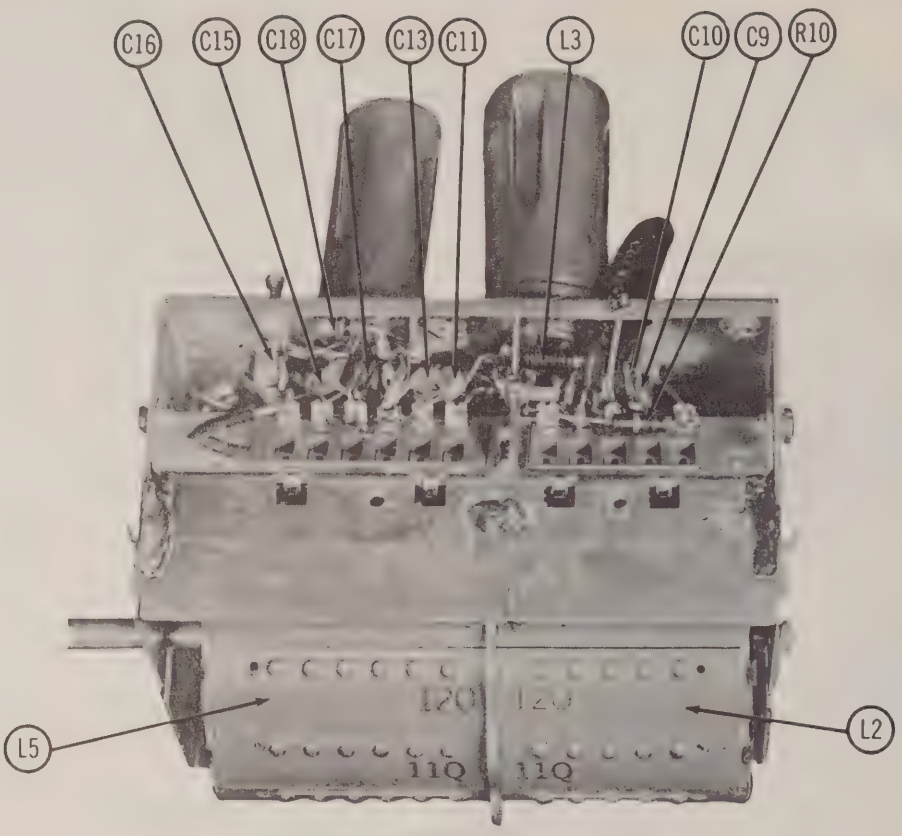
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	720KΩ	0Ω	.1Ω	0Ω	1.9KΩ	†175KΩ	INF	0Ω
V 2	6J6	†12KΩ	†1.9KΩ	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6CB6	110KΩ	47Ω	.1Ω	0Ω	†3.2KΩ	†3.2KΩ	0Ω		
V 4	6CB6	100KΩ	47Ω	.1Ω	0Ω	†3KΩ	†3KΩ	0Ω		
V 5	6CB6	.3Ω	180Ω	.1Ω	0Ω	†3.4KΩ	†3.4KΩ	0Ω		
V 6	6AL5	.2Ω	0Ω	.1Ω	0Ω	1 Meg	0Ω	4.7KΩ		
V 7	12AT7	†9KΩ	4.7KΩ	.3Ω	0Ω	0Ω	†6.9KΩ	†820KΩ	2.2KΩ	.1Ω
V 8	6AH6	1 Meg	0Ω	.1Ω	0Ω	†6.1KΩ	†1.9KΩ	250Ω		
V 9	6AU6	†36KΩ	†1.9KΩ	.1Ω	0Ω	440KΩ	†380Ω	†1.9KΩ		
V 10	6AU6	2.8Ω	0Ω	0Ω	.1Ω	†2.9KΩ	†2.9KΩ	100Ω		
V 11	6AU6	56KΩ	0Ω	.1Ω	0Ω	†2.9KΩ	25KΩ	0Ω		
V 12	6AL5	INF	INF	.1Ω	0Ω	22KΩ	INF	22KΩ		
V 13	6AV6	10 Meg	0Ω	.1Ω	0Ω	670KΩ	670KΩ	550KΩ		
V 14	6AQ5	500KΩ	330Ω	0Ω	.1Ω	†1.9KΩ	†1.4KΩ	500KΩ		
V 15	6BE6	52KΩ	0Ω	.1Ω	0Ω	†820KΩ	70KΩ	1.5Meg		
V 16	6BL7GT	2.3Meg	#1.6Meg	0Ω	1 Meg	#16KΩ	3KΩ	.1Ω	0Ω	
V 17	6AL5	4.8Meg	4.8Meg	.1Ω	0Ω	8.7KΩ	INF	8.7KΩ		
V 18	6SN7GTA	175KΩ	#420KΩ	1.8KΩ	5.1Meg	†5.7KΩ	1.8KΩ	.1Ω	0Ω	
V 19	6BQ6GT	5.7KΩ	0Ω	INF	†11KΩ	470KΩ	#200KΩ	.1Ω	100Ω	Top Cap #16Ω
V 20	6W4GT	†51Ω	INF	190KΩ	4.7Meg	†67Ω	†51Ω	#16Ω	#16Ω	
V 21	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap #416Ω
V 22	5U4G	INF	9.5KΩ	INF	17.4Ω	1.5KΩ	16Ω	INF	9.5KΩ	
V 23	21MP4	0Ω	1.1Meg	Pin 6 †51Ω	Pin 10 #15KΩ	Pin 11 200KΩ	Pin 12 .1Ω			

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 2 OF V22
# MEASURED FROM PIN 3 OF V20

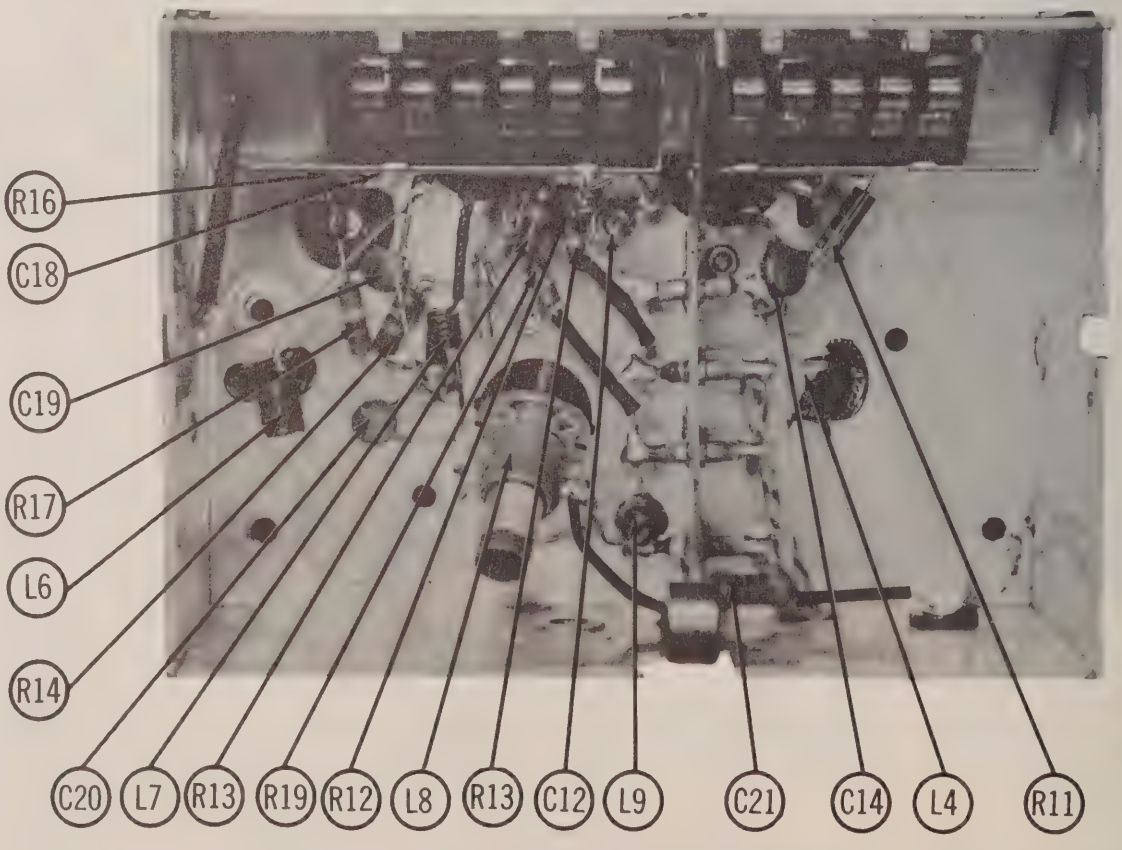


BOTTOM VIEW

TUBE PLACEMENT CHART

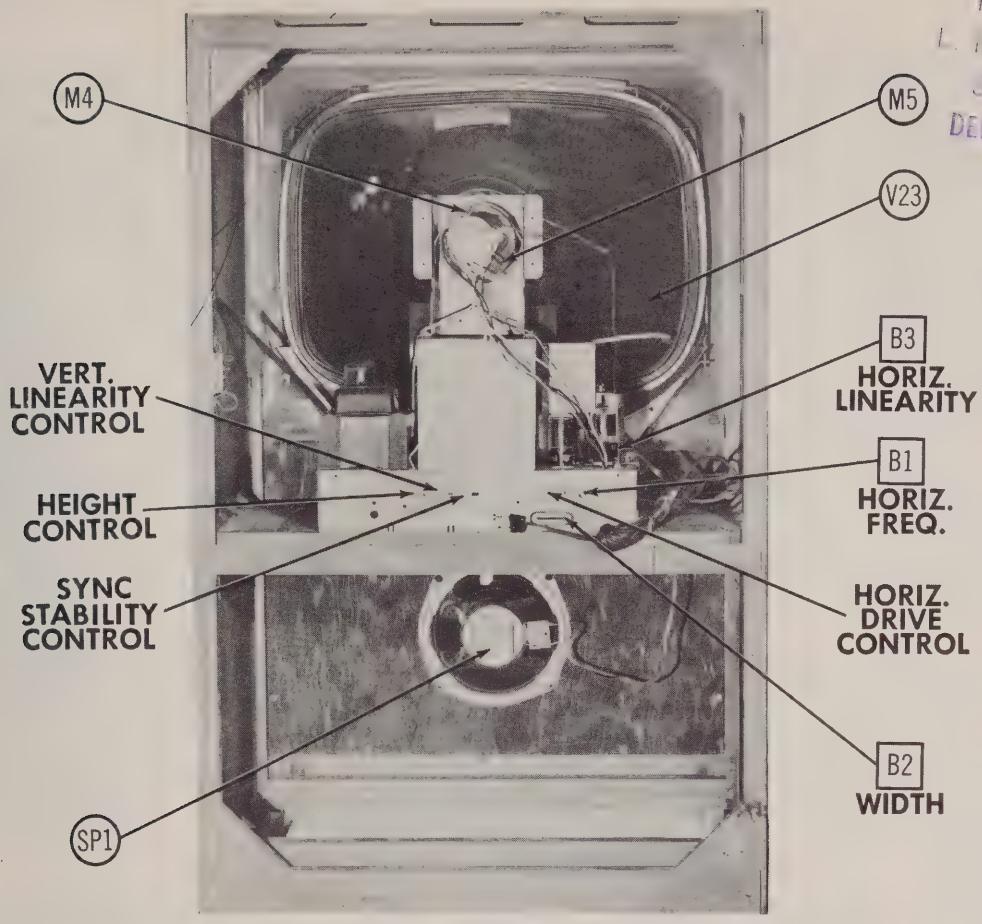


RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

PROPERTY OF
L. F. BLANKENSHIP
3824 MEADE ST.
DENVER, COLORADO



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (B1) until the picture falls into sync.

Adjust the horizontal drive control for the best compromise between brightness and linearity.

Adjust the width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B3) for a picture that is symmetrical from left to right.

SYNC STABILITY CONTROL ADJUSTMENT

Tune set to strongest TV signal available.

Turn the sync stability control clockwise until bending of the picture occurs at the top, then turn counter clockwise until the bending just disappears.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 2 wood & 2 metal screws, Remove rear cover.
3. Disconnect built-in antenna & speaker.
4. Remove 5 chassis bolts. Remove chassis.
5. Remove 4 speaker nuts. Remove speaker.

NOTE:
FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6BQ7	6BQ7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Detector - DC Restorer	6AL5	6AL5	6BT	
V7	Video Amplifier - Sync Phase Inv.	12AT7	12AT7	8A	
V8	Video Output	6AR8	6AR8	7BK	
V9	AGC Keying	6AU6	6AU6	7BK	
V10	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V11	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V12	Ratio Detector	6AL5	6AL5	6BT	
V13	AF Amplifier - AGC Clamper	6AV6	6AV6	7BT	
V14	Audio Output	6AQ5	6AQ5	7BZ	
V15	Sync Separator	6BE6	6BE6	7CH	
V16	Vert. Oscillator - Vert. Output	6BL7GT	6BL7GT	8BD	
V17	Horiz. AFC	6AL5	6AL5	6BT	
V18	Horiz. Mult.	6SN7GTA	6SN7GTA	8BD	
V19	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V20	Damper	5W4GT	6W4GT	4CG	
V21	HV Rectifier	1B3GT	1B3GT	3C	
V32	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V23	21MP4		12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C1A	.80	475	45X390	AFH3-46		UPT84245		FP266	TVL-3792	
B	.50	450								Note 1
C2A	.80	450	45X391	AFH3-142		UPT4445-V10		FP375	TVL-3764	
B	.100	50								
C3	30	400	45X393	PRS450/30		BR3045A		TC77	TVA-1711	
C4	5	25	45X378	PRS150/4		BSR-5-50		TC30	TVA-1203	
C5	30	400	45X393	PRS450/30		BR3045A		TC77	TVA-1711	
C6A	.20	400	45X392	AFH3-137		UPT2145-V5		FP366	TVL-3751	
B	.10	400								
C	40	50								
C7	5	25	45X378	PRS150/4		BSR-5-50		TC30	TVA-1203	
C8	5	25	45X378	PRS150/4		BSR-5-50		TC30	TVA-1203	Note 2
C9	3-9		31B-207		829-10					
C10	3.6		CD8C3R6C							
C11	1.5		CD8C1R5M		811.5MP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15
C12	.5-3		31B-206			838-3			CT565A	
C13	47		CD8X470K		814TN750	TCN-47		N750K-470	NT-5447	5TCU-Q47
C14	1000		CD82Q102Z		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C15	47		CD8Q470K		814TN750	TCN-47		N750K-470	NT-5447	5TCU-Q47
C16	.5-3		31B-206			829-3			CT565A	
C17	10		CD10C100K		811QN750	TCN-10		N750K-100	NT-541	5TCU-Q1
C18	5		CD8D1050C		811.5MP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47
C19	1000		CD8X102Z		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C20	6.8		CD8C6R8C		816.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68
C21	.020		13D-055		31D201	D8-121	TM5T12	GP2K-121	UC-5318	5GA-T12
C22	.22	200	RCP10M2224M		P488-22		PTE4P22		PT4025	2TM-P22
C23A	1000		80X3		BPD-2X001	DD-2-102	TM5DD1	812-001	DCD-521	5HK-2D1
B	1000									
C24	1000		80X1		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C25	.22	200	RCP10M2224M		P488-22		PTE4P22		PT4025	2TM-P22
C26A	1000		80X3		BPD-2X001	DD-2-102	TM5D1	812-001	DCD-521	5HK-2D1
B	1000									
C27	1000		80X1		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C28	1000		80X1		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C29	1000		80X1		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C30	1000		80X1		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C31	1000		80X1		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C32	1000		80X1		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C33	1000		80X1		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C34	47		47X603		8147	D8-470	5HK05	GP1K-470	UC-5447	5GA-Q47
C35	1000		80X1		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C36	5		47X562		815NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47
C37	360	500	47X568							
C38	.047	400	RCP10M4473M		P488-047	DF-503	PTE4S47		PT4147	4TM-S47
C39	.1	400	RCP10M4104M		P488-1	DF-104	PTE4P1		PT401	4TM-P1
C40	.1	200	RCP0M2104M		P288-1	DF-104	PTE2P1		PT401	2TM-P1
C41	1000		80X1		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C42	1.5		47X584		811.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15
C43	5000		47X507		P288-005	D8-502	TM5T5	801-005	DC-525	5HK-D5
C44	100		47X504		8100	D8-101	TM5T1	GP1K-101	UC-531	5GA-T1
C45	5000		47X507		BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5
C46	5000		47X507		BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5
C47	1000		80X1		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C48	470	500	47X525		1468-0005	D8-471	5WS75	GP2K-471	MC-245	1FM-35
C49	.047	200	RCP10M2473M		P288-047	DF-503	PTE4S47		PT4147	2TM-S47
C50	.0047	400	RCP10M4472M		P488-0047	D8-472	PTE6D47	GP2-333-472	PT6247	6TM-D47
C51	.0047	400	RCP10M4472M		P488-0047	D8-472	PTE6D47	GP2-333-472	PT6247	6TM-D47
C52	.01	400	RCP10M4103M		P488-01	D8-103	PTE4P1	GP2-333-103	PT401	4TM-P1
C53	.047	400	RCP10M4473M		P488-047	DF-503	PTE4S47		PT4147	4TM-S47

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C54A	.01									
B	250		†76X8		†PC-80		†1404-01		†103C1	
C										
C55	.0047	600	RCP10M6472M	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C56	.01	400	RCP10M4103M	P488-01	D8-103	PTE4S1	GP2-333-103	PT401	4TM-S1	
C57	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C58	.047	400	RCP10M4473M	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C59A	.002			P688-002		PTE6D2		PT622		
B	.005		†76X7	P688-005	†PC-100	PTE6D5	†1405-01	PT625	†101C1	
C	.006			P688-005		PTE6D6		PT625		
C60	4700	500	47X543	1464-005		IDR5D5		MCB465	MB-25	
C61	.0047	400	RCP10M4472M	P688-0047	D6-472	PTE6D47	GP2-332-472	PT6247	6TM-D47	
C62	100		47X504	B100-101	D8-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C63	.01	600	RCP10M6103M	P688-01	D6-103	PTE6S1	GP2-333-103	PT601	6TM-S1	
C64	.047	600	RCP10M6473M	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C65	.1	600	RCP10M6104M	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C66	.1	600	RCP10M6104M	P688-1	DF-104	PTE6 P1		PT601	6TM-P1	
C67	.047	600	RCP10M6473M	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C68	.015	600	RCP10M6153M	P688-015		PTE6S15		PT601	6TM-S15	
C69	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C70	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C71	.01	400	RCP10M4103M	P488-01	D8-103	PTE4S1	GP2-333-103	PT401	4TM-S1	
C72	270	500	RCM20A271K	1469-0003		SR5T3		MCB241	MB-33	
C73	.0047	600	RCP10M6472M	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C74	.22	200	RCP0M2224M	P288-22		PTE2P22		PT4025	2TM-P22	
C75	.047	200	RCP0M2473M	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C76	4700	500	47X543	1464-005		IDR5D5		MCB465	MB-25	
C77	.1	600	RCP10M6104M	P688-1	DF-104	PTE6P1		PT601	6TM-S1	
C78	330	500	47X570	1469-00035						
C79	330	500	47X570	1469-00035						
C80	270	500	RCM20A271K	1469-0003		SR5T3		MCB241	MB-33	Note 3
C81	.047	400	RCP10M4473M	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C82	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C83	.18	400	RCP10M4184M	P488-18		PTE4P18		PT401	4TM-P18	
C84	.1	400	RCP10M4104M	P488-1		PTE4P1		PT401	4TM-P1	
C85	.047	400	RCP10M4473M	P488-047		PTE4S47		PT4147	4TM-S47	
C86	500	30000	47X560	HV20C	TV3-502	MMC-20P5	413-501		20DE-T5	
C87A	10000		†76X8	BPD-01	DD-3-103	TM5D81	†821-01	DC-511	5HK-281	
B	10000			BPD-01			†831-01	DC-511		

Note 1 Some models use 60MFD in this application.
Note 2 Some models use 4MFD in this application (Part #45X361)
Note 3 Some models use 160MMF in this application (Part #47X564)
* Items C59A, C59B, C59C, R75A, R75B, R75C are combined in one unit.
† Items C54A, C54B, C54C, R61A, R61B are combined in one unit.
When replacing items separately C54B, C54C should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: MALLORY PART No.	INSTALLATION NOTES
R1A	50KΩ	½	40X361A	Q11-123	AG-44-8	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	RS-3/16	AK-4	Not Req.	Attach to R1A
R2A	8KΩ	½	40X362	Q11-118	AG-27-8	AB-14	SU-30	Vert Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R2A
R3A	2.5Meg	½	40X-293-C	Q11-239	AG-84-8	AB-63	SU-565	Height-Note 1
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R3A
R4A	500KΩ	½	B40X333-A	Q11-133	AG-58-8	AB-59	U-50	Brightness
B	Shaft		Not Req.	Not Req.	RS-3/16	AK-4	Not Req.	Attach to R4A
R5A	150KΩ	½	B40X331-A	Q11-129	AG-52-8	AB-46	U-43	Horiz. Drive
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	1 Meg	½	B40X334-D	Q11-137	AG-61-8	AB-69	U-54	Tone
B	Shaft		Not Req.	Not Req.	RS-3/16	AK-4	Not Req.	Attach to R6A
R7A	1 Meg	½	B40X334-D	Q11-137	AG-61-8	AB-69	U-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	RS-3/16	AK-4	Not Req.	Attach to R7A
R8	7.5Meg	½	40X295C					Sync. Stability
R9A	3000Ω	½	78X9	QJ-337 *				Contrast - Panel-Note 2
B	1 Meg	½						Volume & Bri. - Tapped ④ 200KΩ - Rear

Note 1 Some models use alternate control (Part No. 40X364)
Note 2 Some models use alternate control (Part No. 78X12)
*CONCENTRIKIT EQUIVALENT KIT K-2, BASE ELEMENTS & SHAFTS B17-112 & P1-310 (Panel) B13-137 & R2-322 (Rear) & SWITCH 76-2.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R10	15KΩ	½	12A-004	BTS-15K	
R11	47KΩ	½	12A-039	BTS-47K	
R12	100KΩ	½	12A-094		
R13	100KΩ	½	12A-166	BTS-100K	
R14	160KΩ-5%	½	12A-187	BTS-160K-5%	
R15	1500Ω	½	12A-183	BTS-1500	
R16	10KΩ	½	12A-040	BTS-10K	
R17	220KΩ	½	12A-041	BTS-220K	
R18	10KΩ	½	12A-040	BTS-10K	
R19	10KΩ	½	12A-040	BTS-10K	
R20	62000Ω	½	B83622		
R21	47Ω	½	B83470		
R22	1000Ω	½	B85102	BTS-1000	
R23	1000Ω	½	B85102	BTS-1000	
R24	150Ω	½	B85151	BTS-150	
R25	22KΩ	½	B83223		
R26	47Ω	½	B83470		
R27	1000Ω	½	B85102	BTS-1000	
R28	150Ω	½	B85151	BTS-150	
R29	22KΩ	½	B83223		
R30	180Ω	½	B84181	BTS-180	
R31	1500Ω	½	B84153	BTS-1500	
R32	3.9Meg-5%	½	B83395	BTS-3.9Meg-5%	
R33	330KΩ-5%	½	B83334	BTS-330K-5%	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R34	470KΩ	½	B84474	BTS-470K	
R35	47KΩ	½	B84473	BTS-47K	
R36	100KΩ	½	B84104	BTS-100K	
R37	4700Ω-5%	½	B83472	BTS-4700-5%	
R38	33KΩ	½	B84333	BTS-33K	
R39	56000Ω	1	C84562	BTA-5600	
R40	1500Ω	½	B84152	BTS-1500	
R41	1 Meg	½	B84105	BTS-1 Meg	
R42	100Ω	½	B84141	BTS-100	
R43	4700-5%	1	C84472	BTA-4700-5%	
R44	22KΩ	½	B84223	BTS-22K	
R45	100KΩ	½	B85104	BTS-100K	
R46	100KΩ	½	B85104	BTS-100K	
R47	47KΩ	½	B85473	BTS-47K	
R48	1 Meg	½	B84105	BTS-1 Meg	
R49	100Ω	½	B84101	BTS-100	
R50	1000Ω	½	B85102	BTS-1000	
R51	56KΩ	½	B84563		
R52	100KΩ	½	B84104		
R53	1000Ω	½	B85102	BTS-1000	
R54	33KΩ	½	B84333	BTS-33K	
R55	270Ω	½	B84271	BTS-270	
R56	68KΩ	½	B84683	BTS-68K	
R57	22KΩ.	½	B84223	BTS-22K	
R58	22KΩ	½	B84223	BTS-22K	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R59	68KΩ	½	B84683	BTS-68K	
R60	10 Meg	½	B85106	BTS-10 Meg	
R61A	500KΩ		†76X5		
B	500KΩ				
R62	47KΩ	½	B85473	BTS-47K	
R63	330Ω	1	C84331	BTA-330	
R64	1000Ω	½	B84102	BTB-1000	
R65	47KΩ	½	B84473	BTS-47K	
R66	10KΩ	½	B84103	BTS-10K	
R67	270Ω	½	B84274	BTS-270K	
R68	1.5 Meg	½	B84155	BTS-1.5 Meg	
R69	68KΩ	½	B84683	BTS-68K	
R70	820KΩ	½	B84824	BTS-820K	
R71	2200Ω	½	B83222	BTS-2200	
R72	3300Ω	½	B84332	BTS-3300	
R73	2200Ω-5%	½	B83222	BTS-2200-5%	
R74	1000Ω	½	B84102	BTS-1000	
R75A	22KΩ		†76X7	BTS-22K	
B	8200Ω			BTS-8200	
C	8200			BTS-8200	
R76	470KΩ		B85474	BTS-470K	
R77	1.5 Meg		B84155	BTS-1.5 Meg	
R78	1.2 Meg		B84125	BTS-1.2 Meg	
R79	10KΩ		B84103	BTS-10K	
R80	180KΩ		B84184	BTS-180K	
R81	2.2 Meg		B84225	BTS -2.2 Meg	
R82	1500Ω		B84152	BTS-1500	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R83	1 Meg	½	B84105	BTS-1 Meg	
R84	15KΩ	2	B84153	BTS-15K	
R85	2200Ω	½	B84222	BTS-2200	
R86	100KΩ	½	B84104	BTS-100K	
R87	4.7Meg	½	B85475	BTS-4.7Meg	
R88	100KΩ	½	B84104	BTS-100K	
R89	27KΩ	½	B84273	BTS-27K	
R90	470KΩ	½	B85474	BTS-470K	
R91	68000Ω	½	C84683	BTS-6800	
R92	6800Ω	½	C84683	BTS-6800	
R93	33KΩ	½	B85333	BTS-33K	
R94	18000-5%	½	B83183	BTS-1800-5%	
R95	5600Ω	1	C83562	BTA-5600	
R96	150KΩ	½	B83154	BTS-150K	
R97	220KΩ	½	B83224	BTS-220K	
R98	100KΩ	½	B84104	BTS-100K	
R99	5600Ω	½	B84562	BTS-5600	
R100	470KΩ	½	B84474	BTS-470K	
R101	1000Ω	2	D84101	BW-2-100	
R102	15KΩ	2	D84153	BTB-15K	Note 1
R103	56KΩ	½	B84563	BTS-56K	Note 2
R104	5.1Ω	5	43X339		
R105	1 Meg	1	C85105		
R106	10KΩ	5	43X372	1 3/4A-10K	
R107	1500Ω	15	43X375	2D-1500	
R108	330Ω	10	43X373	1 3/4 A-350	
R109	270KΩ	½	B85274	BTS-270KΩ	

Note 1 Some models use a 12KΩ resistor in this application.
Note 2 Not used in all models
† Items R61A, R61B, C54A, C54B, C54C are combined in one unit.
* Items R75A, R75B, R75C, C59A, C59B, C59C are combinedin one unit.

TRANSFORMER (POWER)

ITEM No.	RATING	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.
T1	PRI. 117VAC ⑤ 1.82 A	SEC. 1 600VCT 240ADC	SEC. 2 5VAC ③ 3A	SEC. 3 6.3VAC ⑤ 1.1A SEC. 4 6.3VAC 8.8A	53X324	P-3077 P-3074 ①		

① Use for Secondary #3.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.	NOTES
T2	194Ω	110Ω	54X8	A-8125	A-3000 ①	TBO-2 ①	A-97X	Vert. Osc. Trans.
T3	440Ω tap 9Ω ⑤ 11.8A	SEC. 2 0Ω	53X328					Horiz. Output Trans.
	15Ω 240.40Ω							
T4	1600Ω Tap ⑤ 4.5A		51X156	A-8141	A-3039	A-104X		Vert. Output Trans.
T5A	18Ω		9A2256	MDF-70	TY-3	Y-17		Horiz. Deflection Coils
B	50Ω		9A2274 ②					Vert. Deflection Coils

1. Drill one new mtg. hole.
2. Alternate deflection yoke.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.	NOTES
T6	5.8KΩ	3.2Ω	495Ω	.8Ω	51X150A	A-3850		RO-301	S-3X	

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	8"	PM	3.7Ω	C-12A477 12A504 ① 12A502 ②	ST-115 Mod. P8-V	8A21	① Alternate 6" PM Speaker ② Alternate 12" PM speaker

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ⑤)	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.
L1	.250A	51Ω	2.2 Hy.	52X90		C-2991 ①	TR-3300 ①	C-25A

① Drill one new mtg. hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: MERIT PART No.	NOTES
L2	Ant. Coil	0Ω	0Ω	9A2278-1		Channel 2
L3	RF Choke	0Ω		31B-296		
L4	Fil. Choke	0Ω		34A-546		
L5	RF, Mixer Grid & Osc. Coils	0Ω		9A2279-1		Channel 2
L6	Fil. Choke	0Ω		34A575		
L7	RF Choke	0Ω		31B-295		

FIRESTONE MODELS 13-G-110A, 13-G-115, 13-G-116, 13-G-119, 13-G-120 (Code 334-2-MS31CA)

PARTS LIST AND DESCRIPTIONS (Continued)

(COILS RF-IF) CONT.

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	FIRESTONE PART No.	MERIT PART No.	
L8	1st. Video IF	1.1Ω		31A-078	TV-112	
L9	RF Choke	1.2Ω		31B-239		
L10	Fil. Choke	0Ω		9A2033		
L11	2nd. Video IF	.3Ω	.3Ω	9A2230		
L12	Fil. Choke	0Ω		9A2033		
L13	3rd. Video IF	.3Ω	.3Ω	9A2230		
L14	Fil. Choke	0Ω		9A2033		
L15	RF Choke	2.5Ω		9A1979	TV-180	36 Microhenries
L16	4th. Video IF	.1Ω		9A2226	TV-101	Includes Trap
L17	Series Peaking Coil	7.5Ω		36A10		60 Microhenries wound 22K resistor
L18	Shunt Peaking Coil	24Ω		36A11		500 Microhenries
L19	4.5MC Trap	.3Ω		9A2074	TV-151	
L20	Series Peaking Coil	2.5Ω		9A1979	TV-180	36 Microhenries
L21	Shunt Peaking Coil	7.5Ω		36A10		60 Microhenries wound on 1.5K resistor
L22	Series Peaking Coil	12.5Ω		36A12	TV-182	160 Microhenries wound on 22K resistor
L23	Shunt Peaking Coil	14Ω		36A2	TV-184	190 Microhenries
L24	1st. Sound IF	2.8Ω		9A2168		
L25	2nd. Sound IF	1.7Ω	1.7Ω	9A2170	TV-113	
L26	Ratio Det.	3.4Ω	.7 CT	9A2269		Tertiary winding .15Ω
L27	Horiz. Osc.	48Ω		9A2096	TV-163	
L28	Width Coil	.6Ω		9A2183		
L29	Horiz. Lin.	16Ω		9A2262		

FUSES

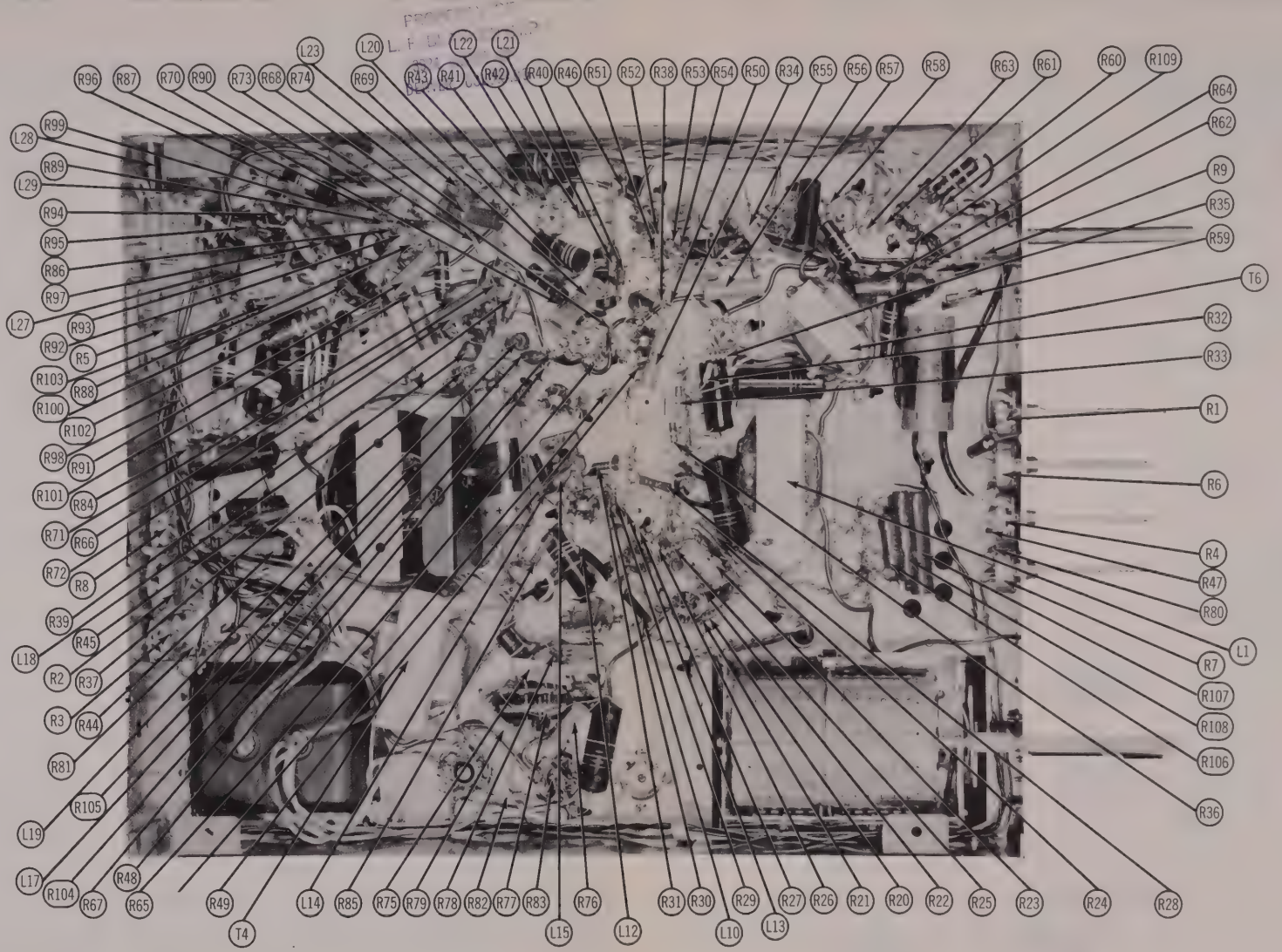
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			FIRESTONE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG-Slo-Blo	4/10 A. 125V	16X147-3	16X146	313.400	357001	MDL-4/10	4405

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					FIRESTONE PART No.		
M2	Bayonet	7.5	.2	white	7A32		Type #51

MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M3	RF Tuner	25A1095	
M4	Centering Magnet	2A419	
M5	Ion Trap	2A407	
	Ant. Coils	9A2278-2	Channel #3
	Ant. Coils	9A2278-3	Channel #4
	Ant. Coils	9A2278-4	Channel #5
	Ant. Coils	9A2278-5	Channel #6
	Ant. Coils	9A2278-6	Channel #7
	Ant. Coils	9A2278-7	Channel #8
	Ant. Coils	9A2278-8	Channel #9
	Ant. Coils	9A2278-9	Channel #10
	Ant. Coils	9A2278-10	Channel #11
	Ant. Coils	9A2278-11	Channel #12
	Ant. Coils	9A2278-12	Channel #13
	RF, Mixer Grid & Osc. Coil	9A2279-2	Channel #3
	RF, Mixer Grid & Osc. Coil	9A2279-3	Channel #4
	RF, Mixer Grid & Osc. Coil	9A2279-4	Channel #5
	RF, Mixer Grid & Osc. Coils	9A2279-5	Channel #6
	RF, Mixer Grid & Osc. Coil	9A2279-6	Channel #7
	RF, Mixer Grid & Osc. Coil	9A2279-7	Channel #8
	RF, Mixer Grid & Osc. Coil	9A2279-8	Channel #9
	RF, Mixer Grid & Osc. Coil	9A2279-9	Channel #10
	RF, Mixer Grid & Osc. Coil	9A2279-10	Channel #11
	RF, Mixer Grid & Osc. Coil	9A2279-11	Channel #12
	RF, Mixer Grid & Osc. Coil	9A2279-12	Channel #13
	Knob	10A779	Off/On Volume
	Knob	10A812	Channel Select or
	Knob	10A820-1	Fine Tuning
	Knob	10A821-1	Contrast
	Escutcheon	S-4X21	Control Panel (Models 13-G-110A, 13-G-115, 13-G-119)
	Back Cover Assembly	S-14X62	
	Mask	4X1192	Models 13-G-115, 13-G-116
	Safety Glass	17X170	
	Back Cover Assembly	S-14X65	
	Mask	4X1195	Models 13-G-119, 13-G-120.
	Safety Glass	17X172	
	Back Cover Assembly	S-14X58	
	Mask	4X1180	Model 13-G-110A
	Safety Glass	17X166	



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

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MODEL 17T20

OLYMPIC MODELS
17C24, 17K31, 17K32, 17T20, 17T33

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OLYMPIC MODELS
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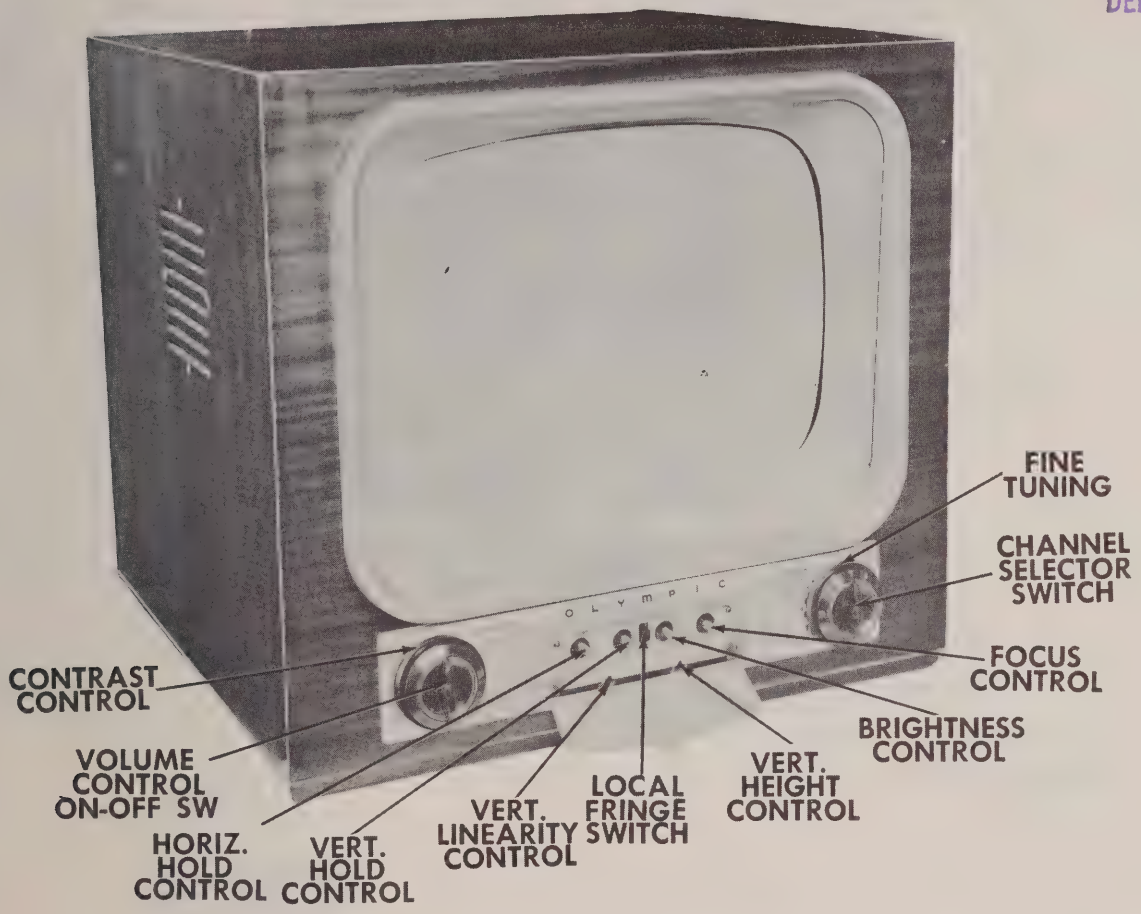

OLYMPIC MODELS
17C24, 17K31, 17K32, 17T20, 17T33

OLYMPIC 17T20

TRADE NAME	Olympic Models 17C24, 17K31, 17K32, 17T20, 17T33 (Ch. TG)
MANUFACTURER	Olympic Radio & Television, Inc., 34-01 38th. Ave., Long Island City 1, N.Y.
TYPE SET	Television Receiver
TUBES	Twenty-Two
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.84 amp. @ 117 volts AC
TUNING RANGE—	Channel 2 thru 13

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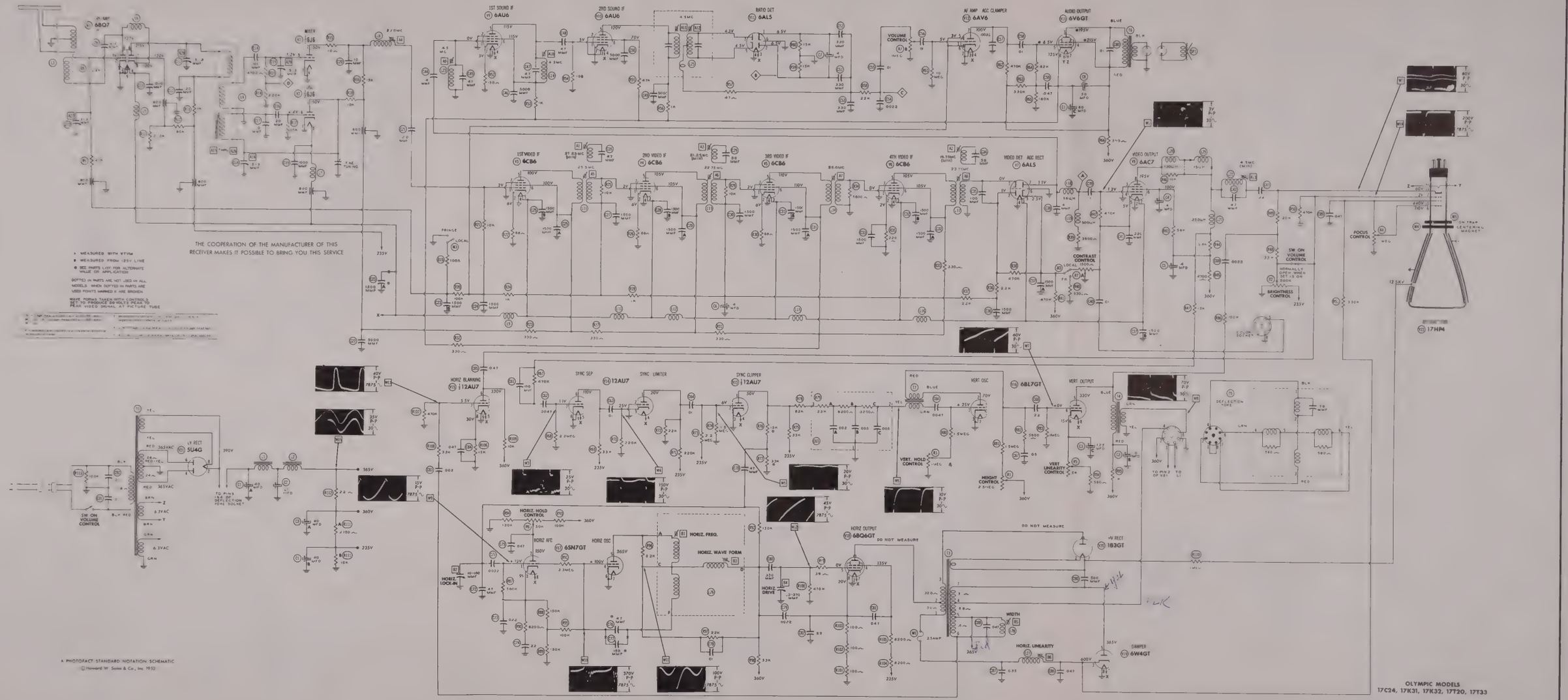
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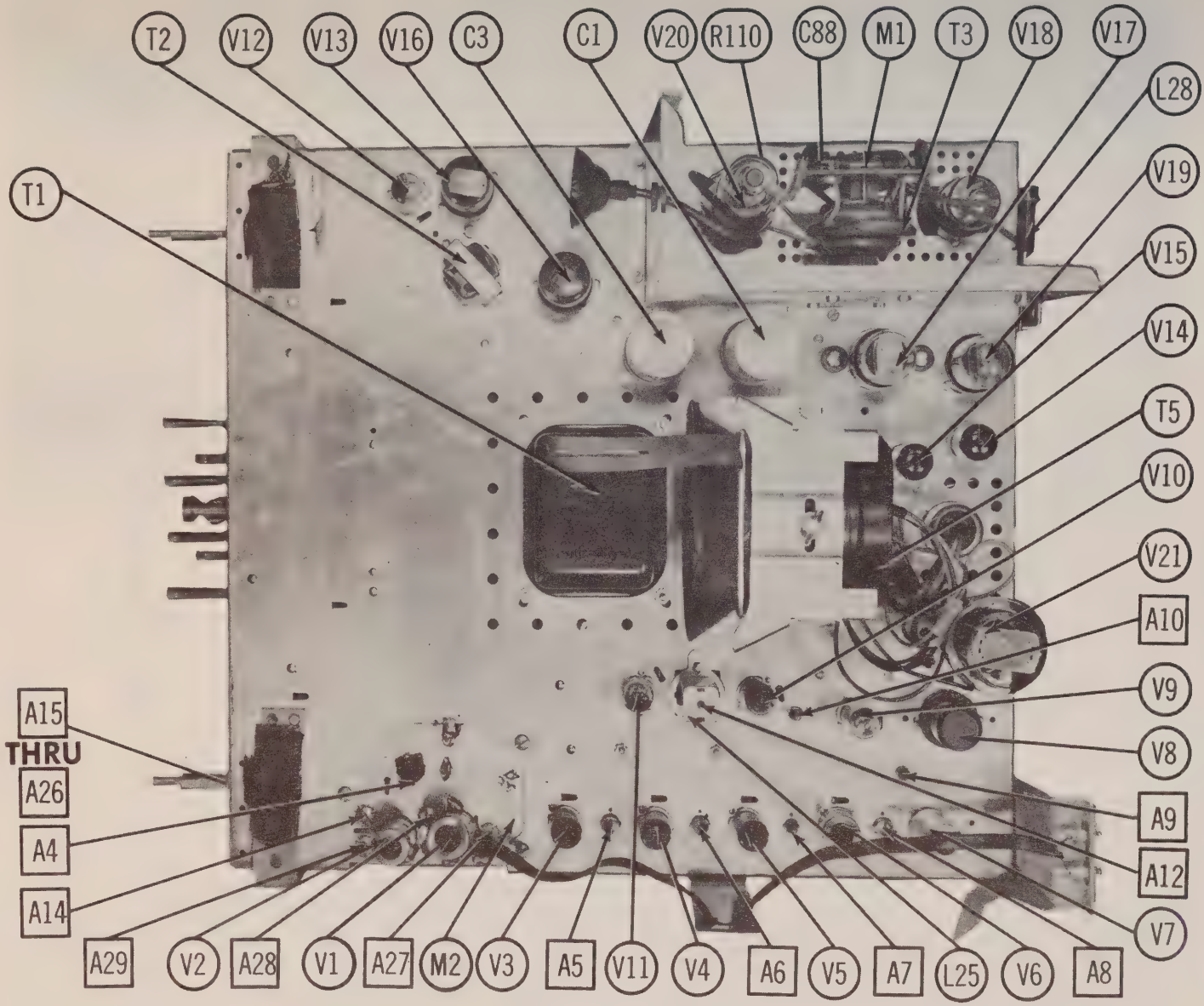
OLYMPIC MODELS 17C24, 17K31, 17K32, 17T20, 17T33



CHASSIS TOP VIEW

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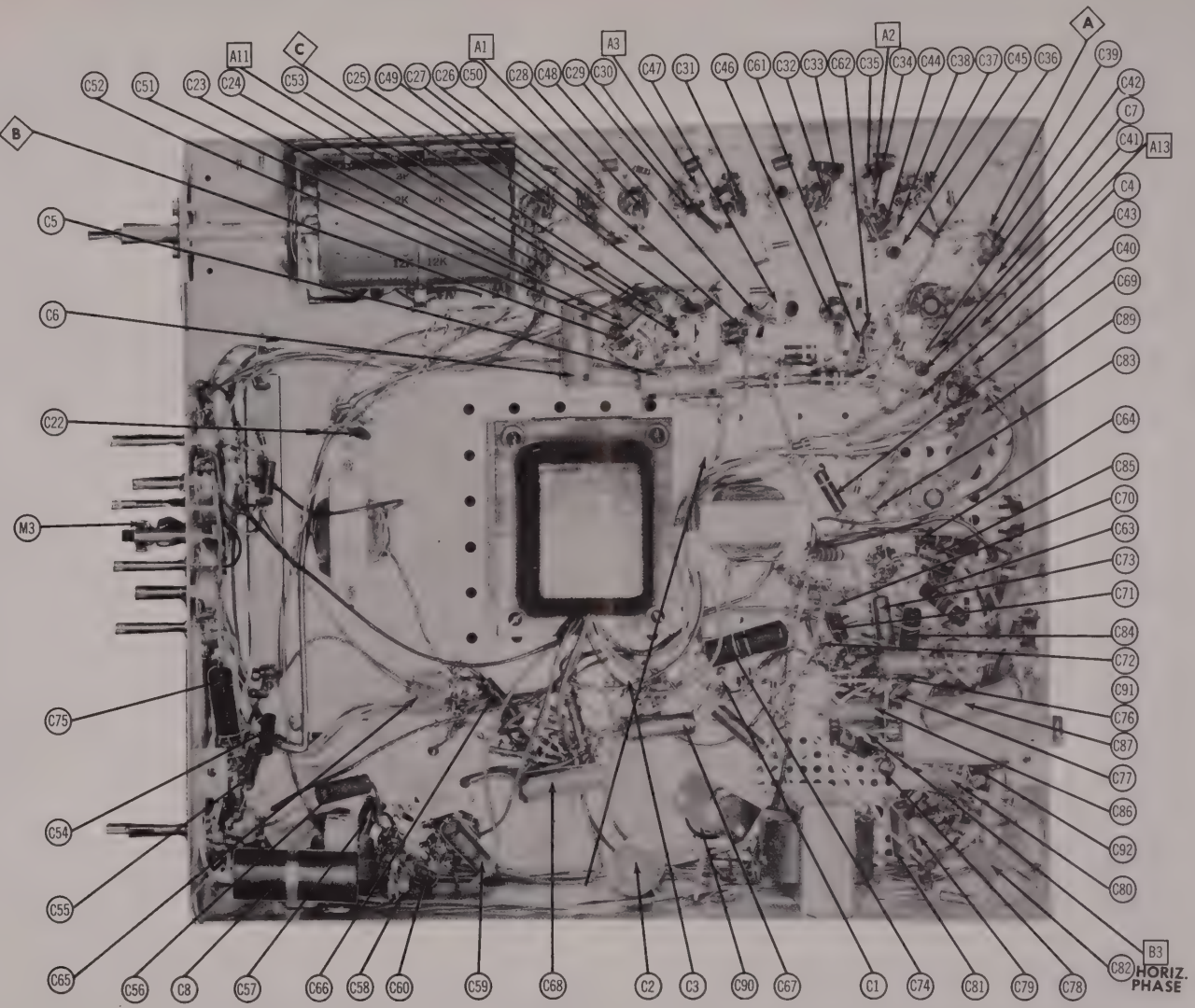
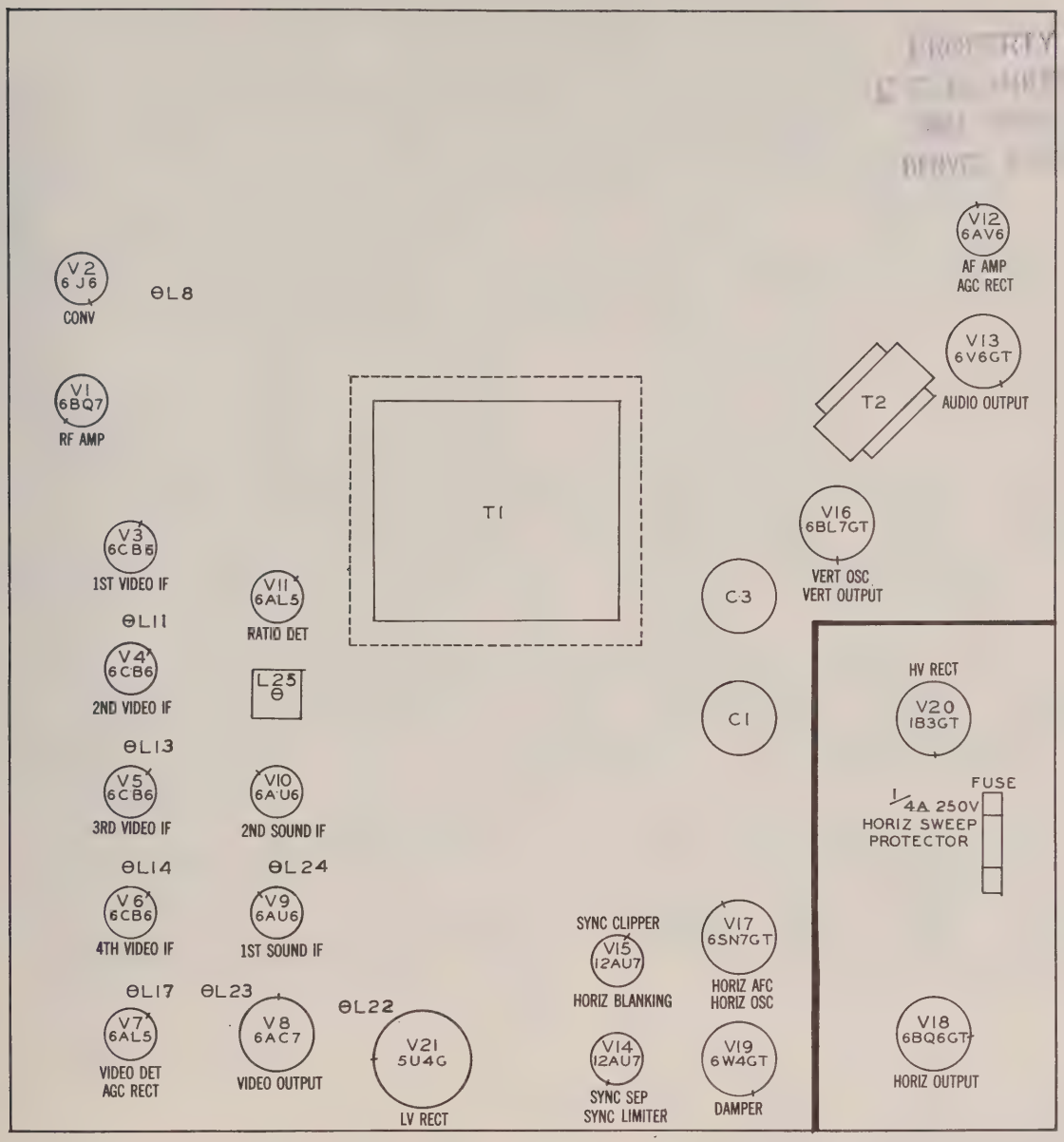


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART



TOP VIEW

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPPY FAILURE
No raster, no sound-V21

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V6, V7, V13
No pic, no sound, has snow-V1, V2, V3
No pic, has sound, has raster- V8, V22
Has pic, no sound-V9, V10, V11, V12, V13
Overloaded picture-V7

SYNC FAILURE
No vert. sync. -V15, V16
No horiz. sync. -V15, V17
No vert. or horiz. sync. V14, V15

SWEEP FAILURE
No raster, has sound-V17, V18, V19, V20, V22, Fuse (M1)
No vertical deflection-V16
Poor vert. linearity or foldover-V16
Poor horiz. linearity or foldover-V17, V18, V19
Narrow picture-V17, V18, V19, V20, V21
Vert. off freq. -V16
Horiz. off freq. -V15, V17

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal oscillator tube, V17 from its socket. Set the local-fringe sw. to local.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 1.5 volt battery to the ungrounded side of C6. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	27.25MC (Unmod.)	Any	DC probe to point (A). Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	19.75MC	"	"	A2	"
3.	"	"	21.25MC	"	"	A3	"
4.	"	"	22.0MC	"	"	A4	Adjust for maximum deflection.
5.	"	"	25.5MC	"	"	A5	"
6.	"	"	22.75MC	"	"	A6	"
7.	"	"	25.0MC	"	"	A7	"
8.	"	"	23.75MC	"	"	A8	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	19.75MC 21.25MC 22.75MC 25.75MC 27.25MC	Any	Vert. Amp. to point (A). Low side to Chassis.		Check for response curve similiar to fig. 1. If necessary lightly retouch A4 thru A8 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Set the contrast control to maximum.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point (B). Common to chassis.	A9, A10 A11	Adjust for maximum deflection.
11.	"	"	"	"	DC probe to point (C). Common to chassis.	A12	Adjust for zero reading. A positve and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450 KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.
Set contrast control to maximum.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (450 KC Swp)	4.5MC	Any	Vert. amp. to point (B). Low side to chassis.	A9, A10 A11	Disconnect stabilizer capacitor C7. Adjust for curve of maximum amplitude and symmetry as per fig. 2.
11.	"	"	"	"	"	Vert. amp. to point (C). Low side to chassis.	A12	Reconnect capacitor C7. Adjust so that 4.5MC occurs at center of crossover lines as in fig. 3. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe thru detector (fig. 4) to pin 11 of picture tube. Common to chassis.	A13	Adjust for MINIMUM deflection.

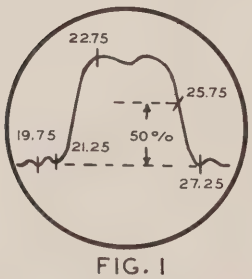


FIG. 1

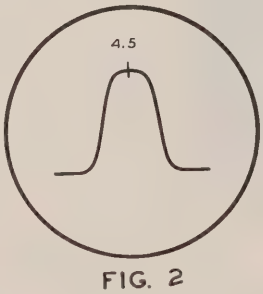


FIG. 2

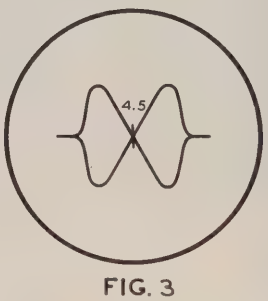


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary.
If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A14.
It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct any individual channel.
If adjustment of A14 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel adjustment screws are reached through a hole just to the right of the channel switch shaft.
The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω on each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. to point (A) Low side to chassis.	A15	Adjust to place sound marker in notch as in fig. 5. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A16	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A17	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A18	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A19	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A20	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A21	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A22	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A23	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A24	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A25	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A26	

RF MIXER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp. to point (D). Low side to chassis.	A27, A28 A29	Adjust for response curve similar to fig. 6. with markers above 90%.
15.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response curve similar to fig. 6. If markers fall below 70% on any channel make slight compromise adjustments of A27, A28 and A29 with channel switch set to that channel, then recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

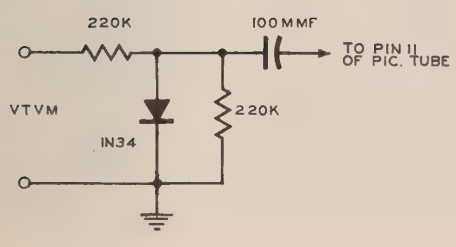


FIG. 4

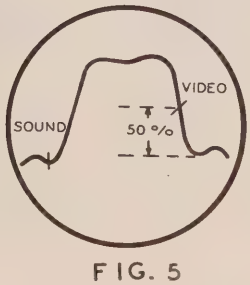


FIG. 5

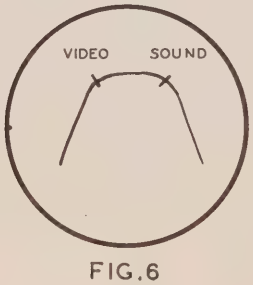
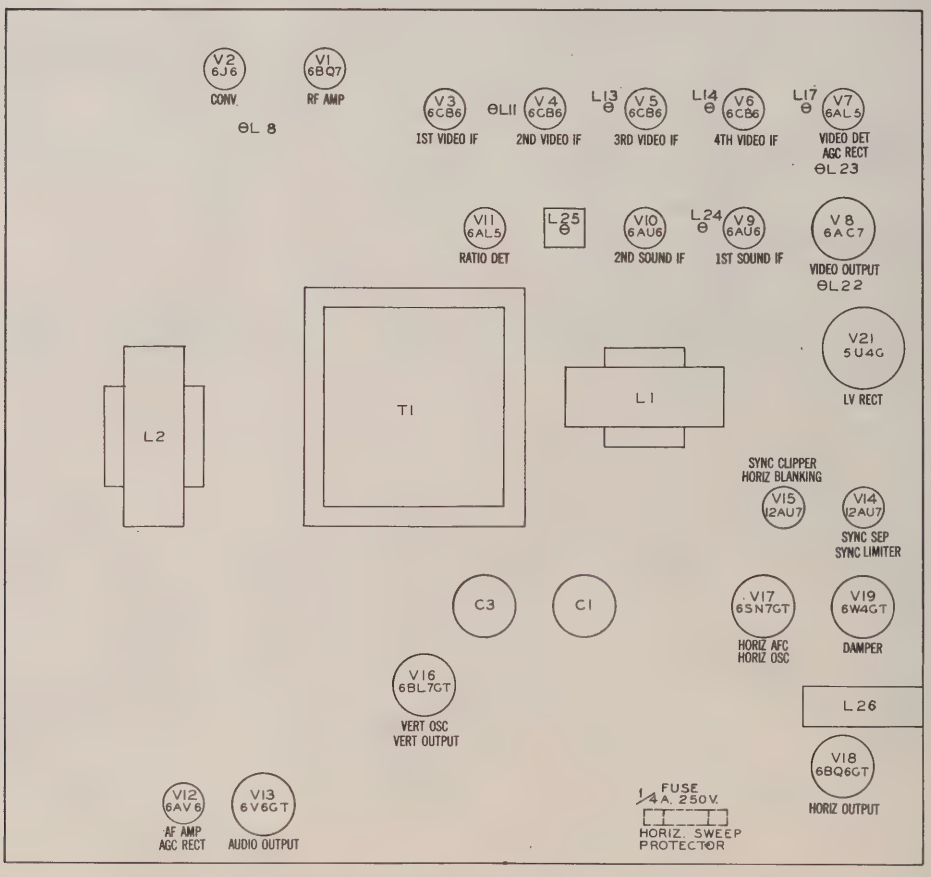


FIG. 6

RESISTANCE MEASUREMENTS

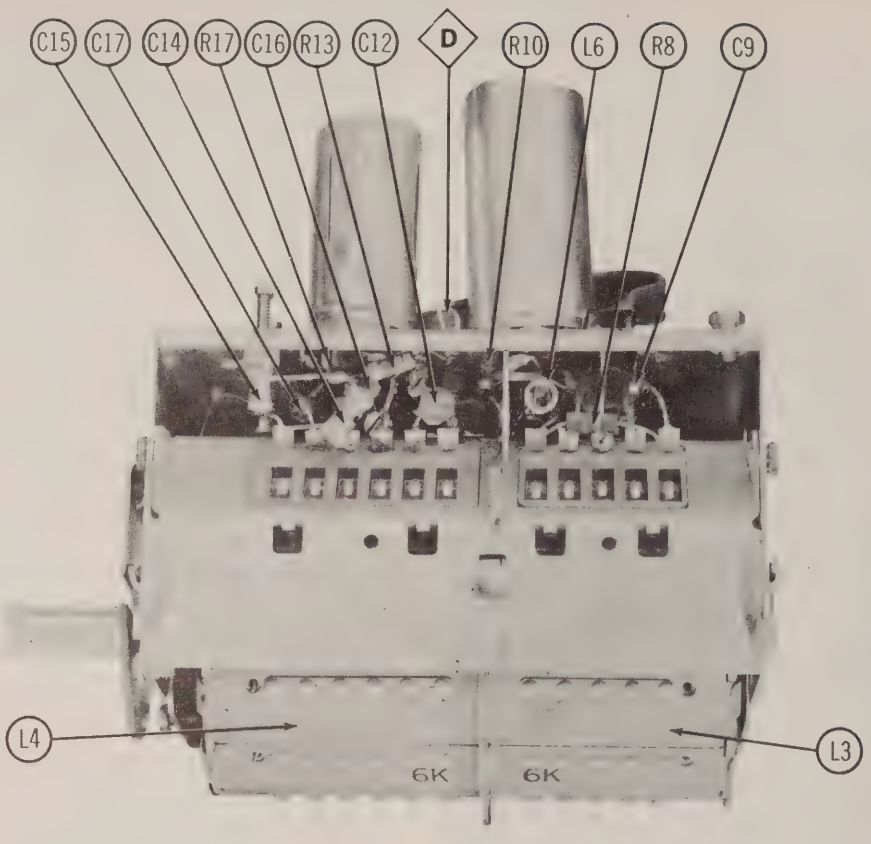
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	150KΩ	0Ω	.1Ω	0Ω	†3.9KΩ	†110KΩ	INF	0Ω
V 2	6J6	■11KΩ	■16KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6CB6	140KΩ	68Ω	.1Ω	0Ω	■990Ω	■990Ω	0Ω		
V 4	6CB6	130KΩ	68Ω	.1Ω	0Ω	■660Ω	■660Ω	0Ω		
V 5	6CB6	130KΩ	68Ω	.1Ω	0Ω	■330Ω	■330Ω	0Ω		
V 6	6CB6	.3Ω	220Ω	.1Ω	0Ω	■660Ω	■660Ω	0Ω		
V 7	6AL5	.2Ω	150KΩ	.1Ω	0Ω	3.3KΩ	0Ω	3.9KΩ		
V 8	6AC7	0Ω	0Ω	0Ω	470KΩ	210Ω	†4.5KΩ	.1Ω	†11KΩ	
V 9	6AU6	1.6Ω	0Ω	0Ω	.1Ω	■1KΩ	■1KΩ	150Ω		
V 10	6AU6	100KΩ	0Ω	0Ω	.1Ω	■1KΩ	■47KΩ	0Ω		
V 11	6AL5	15KΩ	15KΩ	.1Ω	0Ω	INF	0Ω	INF		
V 12	6AV6	10Meg	0Ω	0Ω	.1Ω	130KΩ	130KΩ	†470KΩ		
V 13	6V6GT	INF	¶0Ω	†900Ω	†475Ω	190KΩ	110KΩ	¶.1Ω	50KΩ	
V 14	12AU7	18KΩ	0Ω	220KΩ	.1Ω	.1Ω	†36KΩ	2.2Meg	0Ω	0Ω
V 15	12AU7	†25KΩ	810KΩ	0Ω	.1Ω	.1Ω	†10KΩ	470KΩ	15KΩ	0Ω
V 16	6BL7GT	1.9Meg	†3Meg	0Ω	1 Meg	†1.8KΩ	1KΩ	0Ω	.1Ω	
V 17	6SN7GT	750KΩ	†110KΩ	300KΩ	250KΩ	†33KΩ	0Ω	0Ω	.1Ω	
V 18	6BQ6GT	INF	0Ω	INF	†19KΩ	470KΩ	470KΩ	.1Ω	300Ω	Top Cap #82Ω
V 19	6W4GT	INF	INF	1.4Meg	INF	†132Ω	INF	.1Ω	0Ω	
V 20	1B3GT		PINS	1 - 8	HAVE	IN F	RESISTANCE			Top Cap #402Ω
V 21	5U4G	INF	11KΩ	INF	24Ω	INF	26Ω	INF	11KΩ	
V 22	17HP4	¶0Ω	470KΩ	Pin 6 270KΩ	Pin 10 #330KΩ	Pin 11 240KΩ	Pin 12 ¶.1Ω			

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
LOCAL & FRINGE SWITCH IN "FRINGE" OPOSITION
† MEASURED FROM PIN 2 OF V21
# MEASURED FROM PIN 3 OF V19
■ MEASURED FROM 125VDC LINE
¶ MEASURED FROM PIN 2 OF 13

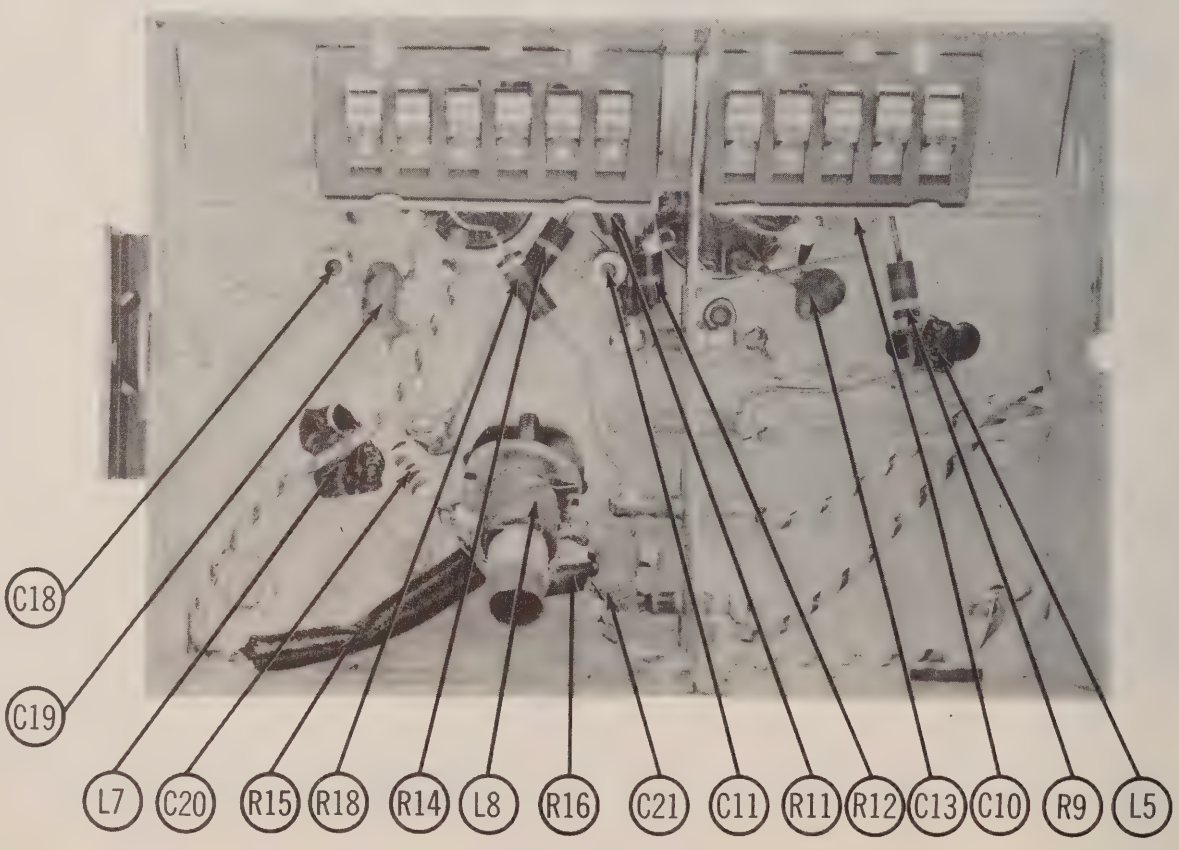


BOTTOM VIEW

TUBE PLACEMENT CHART

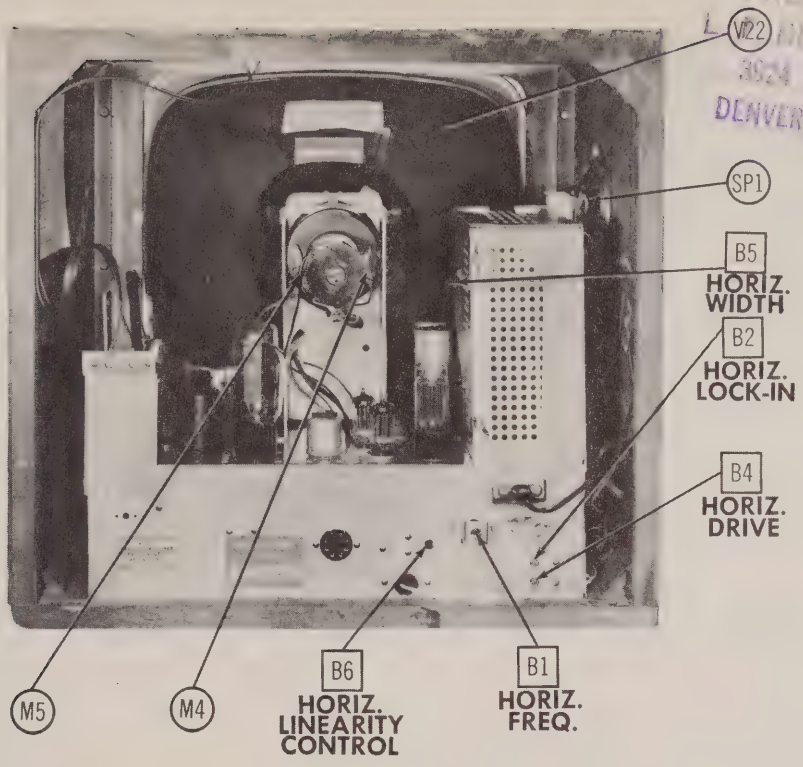


RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

PROPERTY OF
L
3524
DENVER, COLORADO



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.
Under normal operation with a strong signal the picture should remain in horizontal sync at all positions of the horizontal hold control except at extreme clockwise position where the blanking bar may become visible and shift from side to side.
With a weak signal, loss of sync may occur at extreme counter clockwise position.
If slight adjustment of the horizontal frequency slug (B1) fails to yield satisfactory sync as above it may be necessary to adjust the horizontal lock trimmer (B2) and the horizontal waveform slug (B3).
Connect a short between terminals "C" and "D" of L28.
Connect the vertical input lead of an oscilloscope through a 1 meg ohm resistor to terminal "C" of L28.
Set B2 one turn from fully clockwise.
Set horizontal hold control fully clockwise.
Adjust B1 until picture falls into sync, then turn counter clockwise until blanking bar shows, or three or four diagonal bars appear, sloping downward to the right. If unable to synchronize through adjustment of B1, turn B2 slightly clockwise and repeat adjustment of B1.
Remove short across "C" and "D" and adjust B3 for a waveform on scope as in fig. 7. The broad and sharp peaks should be of equal height. While adjusting B3 keep the picture in sync, if necessary, by adjusting B1.
Turn the horizontal hold control fully counter clockwise and momentarily switch to another channel and back again. If the picture is not out of sync adjust B1 slightly and interrupt the signal again, repeating the procedure until picture is out of sync, with several diagonal sloping bars. Turn the horizontal hold control slowly clockwise, noting the least number of bars just before picture pulls into sync.
If more than three are present adjust B2 slightly clockwise. If less than two are present adjust B2 counter-clockwise.
Adjust the horizontal drive trimmer (B4) for the best compromise between brightness and linearity. Recheck adjustment of B1.
Adjust the width slug (B5) for a picture slightly wider than necessary to fill the picture mask horizontally.
Adjust the horizontal linearity slug (B6) for best linearity in the right half of the picture.

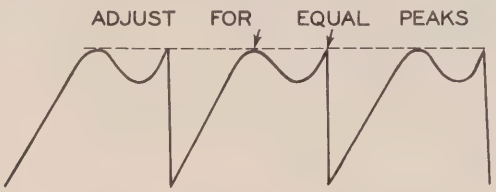


FIG. 7

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 7 wood screws. Remove rear cover.
3. Disconnect built-in antenna and speaker.
4. Remove 4 chassis bolts. Remove chassis.
5. Remove 4 speaker nuts. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6BQ7	6BQ7	9AJ	
B	RF Amplifier	6BK7	6BK7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	4th. Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Detector-AGC Rectifier	6AL5	6AL5	6BT	
V8	Video Output	6AC7	6AC7	8N	
V9	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V10	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Detector	6AL5	6AL5	6BT	
V12	AF Amplifier AGC Clamper	6AV6	6AV6	7BT	
V13	Audio Output	6V6GT	6V6GT	7AC	
V14	Sync Separator-Sync Limiter	12AU7	12AU7	9A	
V15	Sync. Clipper-Horiz. Blanking	12AU7	12AU7	9A	
V16	Vert. Osc.-Vert. Output	6BL7GT	6BL7GT	8BD	
V17	Horiz. AFC-Horiz Oscillator	6SN7GT	6SN7GT	8BD	
V18	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V19	Damper	6W4GT	6W4GT	4CG	
V20	HV Rectifier	1B3GT	1B3GT	3C	
V21	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V22	17EP4	17EP4 17RP4	12C 12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C1A	±40	450	CO-2067	AFH3-199		UPT4445-3335		FP428.4	TVL-4730	
B	±40	450								
C	±60	200								
C2	20	450	CO-2560	PRS450/20		BR2045A		TC75	TVA-1709	
C3A	±40	450	CO-2066	AFH4-87		UPT403		FP245 TC485	TVL-3776 TVA-1311	
B	±10	450								
C	±125	25								
C4	4	450	CO-1056	PRS450/4		BR445		TC70	TVA-1702	
C5	4	450	CO-1056	PRS450/4		BR445		TC70	TVA-1702	
C6	4	450	CO-1056	PRS450/4		BR445		TC70	TVA-1702	
C7	4	450	CO-1056	PRS450/4		BR445		TC70	TVA-1702	
C8	50	350	CO-2344	PRS450/40		BR4035		TC68	TVA-1713	
C9	2.2				TCZ-2.2		NP0K-2R2			
C10	3-9				826-10					
C11	.5-3				829-3			CT585A		
C12	120		SII20	D6-121	TM5T12	GP2K-121		UC-5312	5GA-T12	
C13	500		BPD-001	DD-102	TM5D1	801-001		DC-521	5HK-D1	
C14	100		SI100	D6-101	TM5T1	GP1K-101		UC-531	5GA-T1	
C15	.5-3			829-3				CT585A		
C16	20		SI20NP0	TCZ-20			NP0K-200	ZT-542	5TCC-Q2	
C17	10		SI10N750	TCN-10			N750K-100	NT-541	5TCU-Q1	
C18	.5-3			829-3				CT585A		
C19	1000		BPD-001	DD-102	TM5D1	801-001		DC-521	5HK-D1	
C20	10		SI10N750	TCN-10			N750K-100	NT-541	5TCU-Q1	
C21	120		SII20	D6-121	TM5T12	GP2K-121		UC-5312	5GA-T12	
C22	5000		CCD-502X	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C23A	1500		CC2D-152X	BPD-2X0015	DD-2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	Note 1
B	1500									
C24	1500		CCR-152X	SII500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C25A	1500		CC2D-152X	BPD-2X0015	DD-2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C26	47			SI47N750	TCN-47		N750K-470	NT-5447	5TCU-Q47	
C27	1500		CCR-152X	SII500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C28A	1500		CC2D-152X	BPD-2X0015	DD-2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C29	56	500								
C30	1500		CCR-152X	SII500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C31A	1500		CC2D-152X	BPD-2X0015	DD-2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C32A	1500		CC2D-152X	BPD-2X0015	DD-2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C33	1500		CCR-152X	SII500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C34	56				TCN-56		N750L-560			
C35	100	500	RCM20A101M	1468-0001	D8-101	5W5T1	GP1K-101	MC235	1FM-31	
C36	1500		CCR-152X	SII500	D6-152	TM5D15	GP2L-152	UC-5215	5HK-D15	
C37A	1500		CC2D-152X	BPD-2X0015	DD-2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C38	4	1500	CO-1915					PT401	4TM-P1	
C39	.1	400		P488-1	DF-104	PTE4P1		PT611	6TM-S1	
C40	.01	600		P688-01	D6-103	PTE681	GP2-333-103	PT611	6TM-S1	
C41	220	500	RCM20A221M	1468-00025	D6-221	5W5T25	GP2K-221	MC340	1FM-325	
C42	47									
C43	.22	400		P488-22		PTE4P22		PT4025	4TM-P22	
C44	4	1500	CO-1915							
C45	47									
C46	5000		CCD-502X	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C47	47									
C48	47	500	RCM20A470M	1468-00005	D6-470	5W5Q5	GP1K-470	MC325	1FM-45	
C49	5000		CCD-502X	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C50	5000		CCD-502X	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C51	330	500	RCM20A331M	1468-00035	D6-331		GP2K-331	UC-5333	1FM-335	
C52	330	500	RCM20A331M	1468-00035	D6-331		GP2K-331	UC-5333	1FM-335	
C53	330	500		1468-00035	D6-331		GP2K-331	UC-5333	1FM-335	
C54	.0022	600		P688-0022	D6-222	PTE6D22	GP2-333-222	PT622	6TM-D22	
C55	.01	600		P688-01	D6-103	PTE681	GP2-333-103	PT611	6TM-S1	
C56	.01	600		P688-01	D6-103	PTE681	GP2-333-103	PT611	6TM-S1	
C57	.0022	600		P688-0022	D6-222	PTE6D22	GP2-333-222	PT622	6TM-D22	
C58	.01	600		P688-01	D6-103	PTE681	GP2-333-103	PT611	6TM-S1	
C59	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C60	.01	600		P688-01	D6-103	PTE681	GP2-333-103	PT611	6TM-S1	
C61	100	500	RCM20A101M	1468-0001	D8-101	5W5T1	GP1K-101	MC235	1FM-31	
C62	.0047	600		P688-0047	D6-472	PTE6D47	GP2-333-472	PT6347	6TM-D47	
C63	.01	600		P688-01	D6-103	PTE681	GP2-333-103	PT611	6TM-S1	
C64	.01	600		P688-01	D6-103	PTE681	GP2-333-103	PT611	6TM-S1	
C65A	.002			P688-002		PTE6D2		PT622	●I01C1	
B	.005		}	P688-005	●pC-100	PTE6D5	●1405-01	PT625		
C	.008			P688-005		PTE6D5		PT625		
C66	.0047	600	CO-O-8472K	P688-0047		PTE6D47		PT6247	6TM-D47	
C67	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C68	.22	400		P488-22		PTE4P22		PT4025	4TM-P22	
C69	.0022	600		P688-0022	D6-222	PTE6D22	GP2-333-222	PT622	6TM-D22	
C70	47	500	RCM20A470M	1468-00005	D6-470	5W5Q5	GP1K-470	MC325	1FM-45	
C71	.0022	600		P688-0022	D6-222	PTE6D22	GP2-333-222	PT622	6TM-D22	
C72	47	500	RCM20A470M	1468-00005	D6-470	5W5Q5	GP1K-470	MC325	1FM-45	
C73	.022	400		P488-022	DF-303	PTE4S22		PT4122	4TM-S22	
C74	.22	400		P488-22		PTE4P22		PT4025	4TM-P22	
C75	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C76	47	500		1468-00005		5W5Q5		MC3225	MS-45	Note 2 Note 3
C77	150									
C78	.01	600		P688-01	D6-103	PTE681	GP2-333-103	PT611	6TM-S1	
C79	.0022	600	CO-O-8222J	P688-0022	D6-222	PTE6D22	GP2-333-222	PT622	6TM-D22	
C80	330	500	RCM20A331M	1468-00035	D6-331		GP2K-331	UC-5333	1FM-335	
C81	.047	600		P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C82	.22	400		P488-22		PTE4P22		PT4025	4TM-P22	
C83	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C84	.047	400		P488-047	DF-503	PTE4S47		PT6147	6TM-S47	
C85	.047	400		P488-047	DF-503	PTE4S47		PT6147	6TM-S47	
C86	.047	1000	CO-O-X503	P1088-047				PT4147	4TM-S47	
C87	.035	1000	CO-O-X355	P1088-033				TR-15		
C88	.047	400		P488-047		PTE4S47		PT4147	4TM-S47	
C89	.047	1000	CO-O-X503	P1088-047				PT1615	TR-15	
C90	500	20000	CO-3600	HV 20V	TV3-502	MM-C20TT	413-501		20HK-D5	
C91	.01	600		689ZGXY-01		PJ6S1		PT611	6TM-S1	
C92	.01	600		689ZGXY-01		PJ6S1		PT611	6TM-S1	

Note 1. C23A not used in all models.
Note 2. Some models use 180MMF in this application (Part #CCD-U181C)
Note 3. Not used in Models when C76 is 180MMF
● Items C65A, C65B, C65C, R79A, R79B, R79C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: MALLORY PART No.	INSTALLATION NOTES
R1A	2.5Meg	½	PT-2272	Q11-239	AG-84-S	AB-83	U-355	Height
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
R2A	500KΩ	½	PT-2270	Q11-133	AG-56-S	AB-59	U-50	Brightness
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
R3A	1 Meg	½	PT-2269	Q11-137	AG-61-S	AB-69	U-54	Vert Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R3A
R4A	1Meg	½	PT-2269	Q11-137	AG-61-A	AB-69	U-54	Focus
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R4A
R5A	1500Ω	½	PT-2271	Q11-114	AG-19-S	AB-10	U-14	Vert Linearity
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R5A
R6A	50KΩ	½	PT-2268	Q11-123	AG-44-S	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R6A
R7A	1500Ω	½	PT-2634		RTV-353			Contrast-Panel Volume & SW-Rear
B	1 Meg							

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R8	22KΩ	½			
R9	47KΩ	½		BTS-47K	
R10	220KΩ	½		BTS-220K	
R11	100KΩ	½		BTS-100K	
R12	180KΩ-5%	½		BTS-180K-5%	
R13	4700Ω	½		BTS-4700	
R14	330KΩ	½		BTS-330K	
R15	10Ω	½			
R16	15KΩ	½			
R17	10KΩ	½		BTS-10K	
R18	10KΩ	½		BTS-10K	
R19	100KΩ	½		BTS-100K	
R20	100KΩ	½		BTS-100K	
R21	10KΩ	½			
R22	68Ω	½			
R23	330Ω	½		BTS-330	
R24	1000Ω	½		BTS-1000	
R25	10KΩ	½		BTS-10K	
R26	68Ω	½			
R27	330Ω	½		BTS-330	
R28	1000Ω	½		BTS-1000	
R29	10KΩ	½			
R30	68Ω	½			
R31	330Ω	½		BTS-330	
R32	330Ω	½		BTS-330	
R33	330Ω	½		BTS-330	
R34	5600Ω	½			
R35	220Ω	½		BTA-220	
R36	22KΩ	½		BTS-22K	
R37	22KΩ	½		BTS-22K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R38	470KΩ	½		BTS-470K	
R39	3900Ω	½		BTS-3900	
R40	33000Ω	½		BTS-33000	
R41	470KΩ	½		BTS-470K	
R42	470KΩ	½		BTS-470K	
R43	58KΩ	1		BTA-58K	
R44	6800Ω	2		BTB-6800	
R45	4700Ω	2		BTB-4700	
R46	10KΩ	½		BTS-10K	
R47	15KΩ	½		BTS-15K	
R48	33KΩ	½		BTS-33K	
R49	120KΩ	½		BTS-120K	
R50	470KΩ	½		BTS-470K	
R51	330KΩ	½		BTS-330K	
R52	150Ω	½		BTS-150	
R53	1000Ω	½		BTS-1000	
R54	100KΩ	½			
R55	47KΩ	½			
R56	1000Ω	½		BTS-1000	
R57	47Ω	½			
R58	22KΩ	½		BTS-22K	
R59	15KΩ	½		BTS-15K	
R60	15KΩ	½		BTS-15K	
R61	10Meg	½		BTS-10Meg	
R62	470KΩ	½		BTS-470K	
R63	330KΩ	½		BTS-330K	
R64	82KΩ	½		BTS-82K	
R65	180KΩ	½		BTS-180K	
R66	390Ω	2		BW-2-390	
R67	470KΩ	½		BTS-470K	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R68	2.2Meg	½		BTS 2.2 Meg	
R69	33KΩ	½		BTA 33K	
R70	220KΩ	½		BTS-220K	
R71	220KΩ	½		BTS-220K	
R72	22KΩ	½		BTS-22K	
R73	2.2Meg	½		BTS-2.2Meg	
R74	1.5Meg	½		BTS-1.5Meg	
R75	33KΩ	2		BTB-33K	
R76	15KΩ	½		BTS-15K	
R77	33KΩ	½		BTS-33K	
R78	62KΩ	½		BTS-62K	
R79A	22KΩ	½	● PC-3435	BTS-22K	
B	8200Ω	½		BTS-8200	
C	8200Ω	½		BTS-8200	
R80	1.5Meg	½		BTS-1.5Meg	
R81	1.5Meg	½		BTS-1.5Meg	
R82	5600Ω	½		BTS-5600	
R83	1 Meg	½		BTS-1 Meg	
R84	560Ω	½		BTS-560	
R85	10001	1		BTA-1000	
R86					
R86	100KΩ	½		BTS-100K	
R87	560KΩ-5%	½		BTS-560K-5%	
R88	150KΩ	½		BTS-150K	
R89	150KΩ	½		BTS-150K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R90	82000	1		BTS 8200	
R91	3 3Meg	½		BTA 3 33Meg	
R92	150KΩ	½		BTS-150K	
R93	100KΩ	½		BTA-100K	
R94	120KΩ	½		BTS-120K	
R95	100KΩ 5%	½		BTA-100K-5%	
R96	8200Ω	½		BTS-8200	
R97	22KΩ	½		BTS-22K	
R98	33KΩ	½		BTA-33K	
R99	39Ω	½			
R100	470KΩ	½		BTS-470K	
R101	100Ω	1		BTA 100	
R102	100Ω	1		BTA-100	
R103	100Ω	1		BTA-100	
R104	8200Ω	2		BTB-8200	
R105	8200Ω	2		BTB-8200	
R106	15KΩ	½		BTS-15K	
R107	470KΩ	½		BTS-470K	
R108	33KΩ	½		BTS-33K	
R109	10KΩ	½		BTS-10K	
R110	1 Meg	2			
R111A	2750Ω	15			
B	150	7.5			
R112	22Ω	2			
R113	100KΩ	1		BTA-100K	

● Items R79A, R79B, R79C, C65A, C65B, C65C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANCOR PART No	REPLACEMENT DATA: MERIT PART No	REPLACEMENT DATA: CHICAGO PART No	REPLACEMENT DATA: TRIAD PART No
T1	117VAC ≙ 1.84A	735VCT ≙ 200ADC	5VAC ≙ 3A	6.3VAC ≙ 8.6A SEC 4 6.3VAC ≙ 1.1A	TR-1968	P-8169 ①	P-3059	TP-360	R-37BC

① Parallel the two 6 Volt, 5 & 7 Amp. windings and use for SEC 3.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANCOR PART No	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.	NOTES
T2	180.	970.	TR-1473	A-8125	A-3000 ①	TBO-1 ②	A-97X	Vert. Osc. Trans.
T3	370.1 tap ≙ 50Ω	10.3Ω tap ≙ 6Ω 7.2Ω SEC 2 6Ω	TR-2615	A-8130 ③	HVO-7 ④	TFB-12		Horiz. Output Trans.
T4	695Ω	6.8Ω	TR-2189A TR-2189 ⑤	A-8112 ①	A-3038	TBO-5	A-98X	Vert. Output Trans.
T5A	12.5Ω		CL-2087	DY-8	MDF-70	TT-2	Y-13	Horiz. Deflection Coils
B	46Ω							Vert. Deflection Coils

① Drill one new mtg. hole
② Mount on top of chassis
③ Use with WC-, width coil
④ Use with MWC-1 width coil
⑤ Alternate Vert. Output Trans.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI	RATING: DC RES. SEC.	REPLACEMENT DATA: OLYMPIC PART No	REPLACEMENT DATA: STANCOR PART No	REPLACEMENT DATA: MERIT PART No	REPLACEMENT DATA: CHICAGO PART No	REPLACEMENT DATA: TRIAD PART No	NOTES
T9	7KΩ	3.5Ω	430Ω	.56Ω	TR-2686	A-3949	A-3020	RO-13 ①	S-7X	① Drill one new mtg. hole

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: JENSEN PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	5"	PM	3.5Ω	SK-1788-1 SK-1788 ① SK-1789 ②	ST-105 Mod. P5-K	5A1	① Alternate 5" speaker ② 10" PM speaker used on Models 17C24, 17K31 and 17K32

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ^)	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANCOR PART No	REPLACEMENT DATA: MERIT PART No	REPLACEMENT DATA: CHICAGO PART No	REPLACEMENT DATA: TRIAD PART No
L1	200A	60Ω	2.6 Hy.	CK1346	C-2326 ↓	C-2991 ↓	TF-3300 ↓	C-25A ↓
L2	200A	63Ω	2.1 Hy.	CK1346	C-2326 ↓	C-2991 ↓	TF-3300 ↓	C-25A ↓

① Drill one new mtg. hole.

OLYMPIC MODELS 17C24, 17K31, 17K32, 17T20, 17T33

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	OLYMPIC PART No.	MERIT PART No.	
L3	Ant. Coils	0Ω	0Ω			
L4	RF, Mixer Grid & Osc. Coils	0Ω				
L5	Fil. Choke	0Ω				
L6	RF Choke	0Ω				
L7	Fil. Choke	0Ω				
L8	1st. Video IF	.8Ω				
L9	Fil. Choke	0Ω		CL-2427		
L10	Fil. Choke	0Ω		CL-2427		
L11	2nd. Video IF	.2Ω	.2Ω	CL-2619		Includes Trap
L12	Fil. Choke	0Ω		CL-2427		
L13	3rd. Video IF	.2Ω	.2Ω	CL-2619		Includes Trap
L14	4th. Video IF	.3Ω	.3Ω	CL-2309		
L15	Fil. Choke	0Ω		CL-2427		
L16	Fil. Choke	0Ω		CL-2427		
L17	5th. Video IF	.2Ω	.2Ω	CL-2620		Includes Trap
L18	Series Peaking Coil	2.5Ω		CL-1535	TV-180	36 Microhenries
L19	Shunt Peaking Coil	11.5Ω		CL-2614	TV-188	500 Microhenries
L20	Series Peaking Coil	5Ω		CL-1536		130 Microhenries - Some Models use 120 Microhenries
L21	Shunt Peaking	7.8Ω		CL-2073	TV-185	250 Microhenries
L22	4.5MC Trap	1.6Ω		CL-2331	TV-151	
L23	1st. Sound IF	1.6Ω			TV-151	
L24	2nd. Sound IF	1.6Ω			TV-151	
L25	Ratio Det.	5.2Ω	2Ω CT	TR-2630	TV-115	Tertiary Winding .7Ω
L26	Horiz. Osc.	120Ω	37Ω	TR-2294	TV-162	Primary tapped @ 35Ω
L27	Horiz. Lin.	32Ω		CL-2678	MWC-1	
L28	Width Coil	.7Ω		CL-1502	MWC-2	
L29	Series Peaking Coil	5Ω		CL-1536		115 Microhenries-Not used in all Models

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			OLYMPIC PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG (P/T)	1/4A 250V	FU-1683		318,250		GJV-1/4	

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M2	RF Tuner	CL-2608-17	Complete with tubes
M3	Switch	SW-2012	Local and fringe
M4	Centering Magnet	PP-2626	
M5	Ion Trap	PP2623	
B2, B4	Trimmer	CT-2612	Dual horiz. lock (10-160MMF) Horiz. Drive (50-370MMF)
	Knob	KN2295-1	Channel Selector (Mahogany)
	Knob	KN2296	Fine Tuning (Mahogany)
	Knob	KN2297-1	On/Off Volume (Mahogany)
	Knob	KN2298	Contrast (Mahogany)
	Knob	KN2545	Channel Selector (Blonde)
	Knob	KN2546	Fine Tuning (Blonde)
	Knob	KN2547	On/Off Volume (Blonde)
	Knob	KN2548	Contrast (Blonde)
	Door	MP-2304-1	Control Cover
	Escutcheon	MP2616	Front Panel
	Escutcheon	ES2650	Safety Glass (Models 17T20 & 17C24)
	Safety Glass	PP2242	Models 17T33, 17K31, & 17K32
	Safety Glass	PP2595	Models 17T20 & 17C24
	Mask	PP2648	Models 17T20 & 17C24
	Mask	PP2349-2	Models 17T33, 17K31 & 17K32
	Back Cover	ST2223-1	Models 17T20 & 17T33
	Back Cover	ST2235-1	Models 17C24
	Back Cover	ST2653	Models 17K31 & 17K32
	Cup	MS2666	For Picture Tube Backcover

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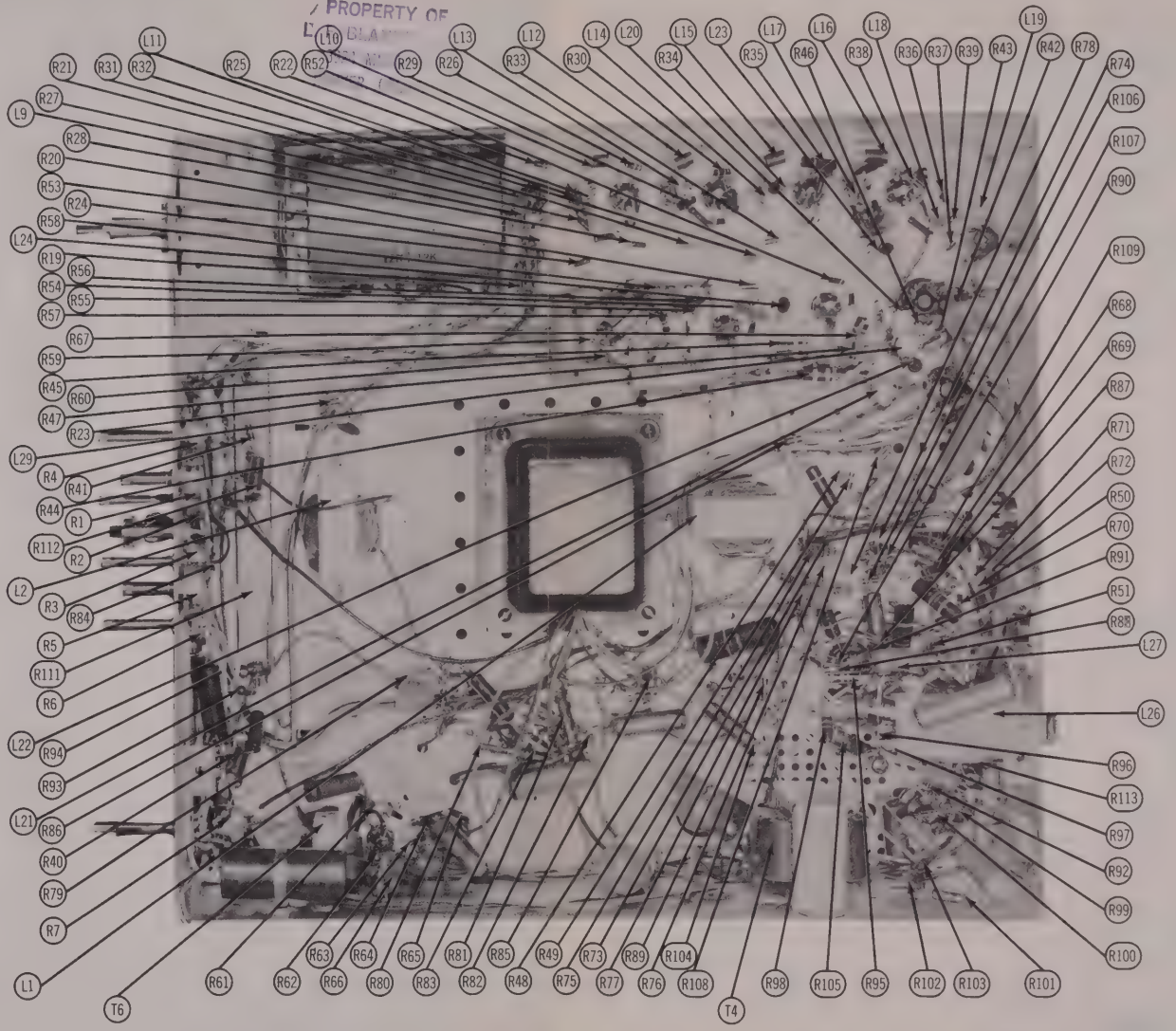

CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

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OLYMPIC
MODELS 21C28, 21D29, 21K26, 21T27

MODEL 21C28

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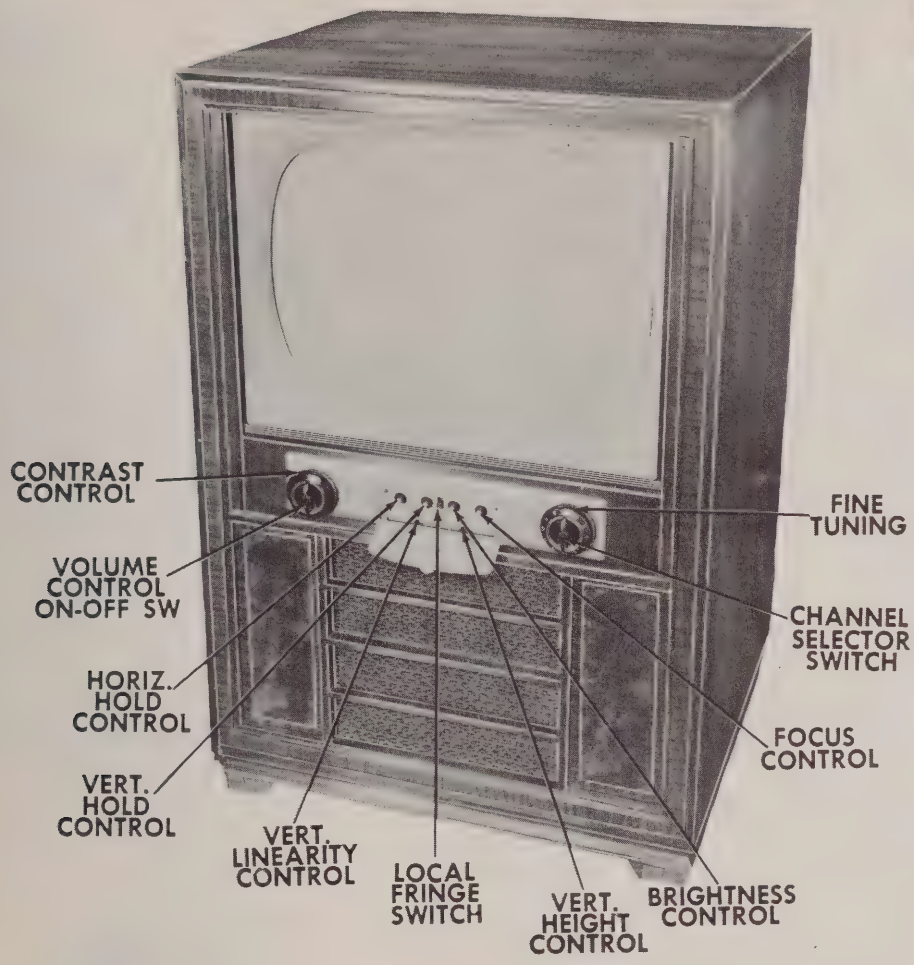
OLYMPIC
MODELS 21C28, 21D29, 21K26, 21T27



OLYMPIC 21C28

TRADE NAME	Olympic Models 21C28, 21D29, 21K26, 21T27 (Ch. TH)
MANUFACTURER	Olympic Radio & Television Inc., 34-01 38th. Ave., Long Island City, N.Y.
TYPE SET	Television Receiver
TUBES	Twenty-two
POWER SUPPLY	110-120 Volts AC-60Cycle
RATING	1.84 Amp. @ 117 Volts AC
TUNING RANGE—CHANNELS	2thru 13

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OLYMPIC
MODELS 21C28, 21D29, 21K26, 21T27

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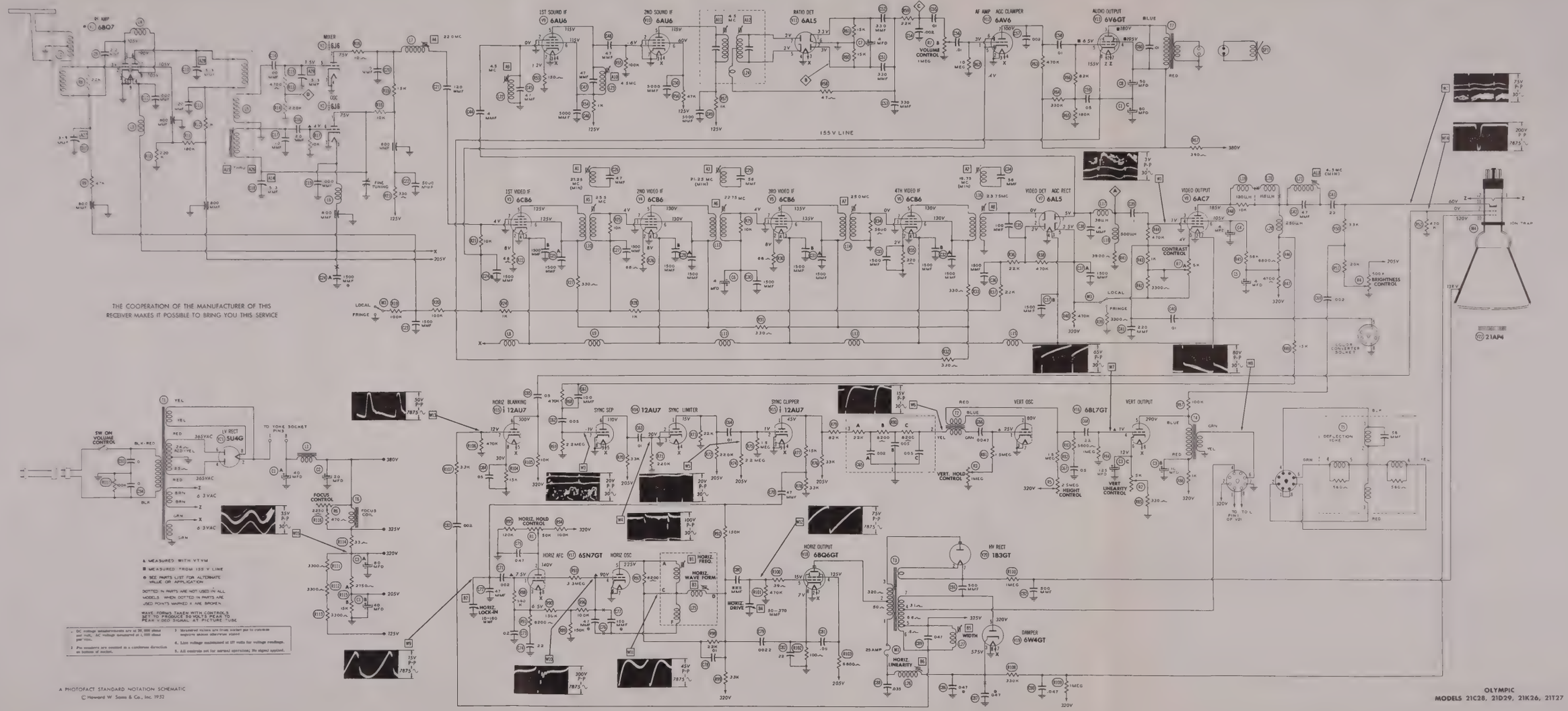
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OLYMPIC MODELS 21C28, 21D29, 21K26, 21T27
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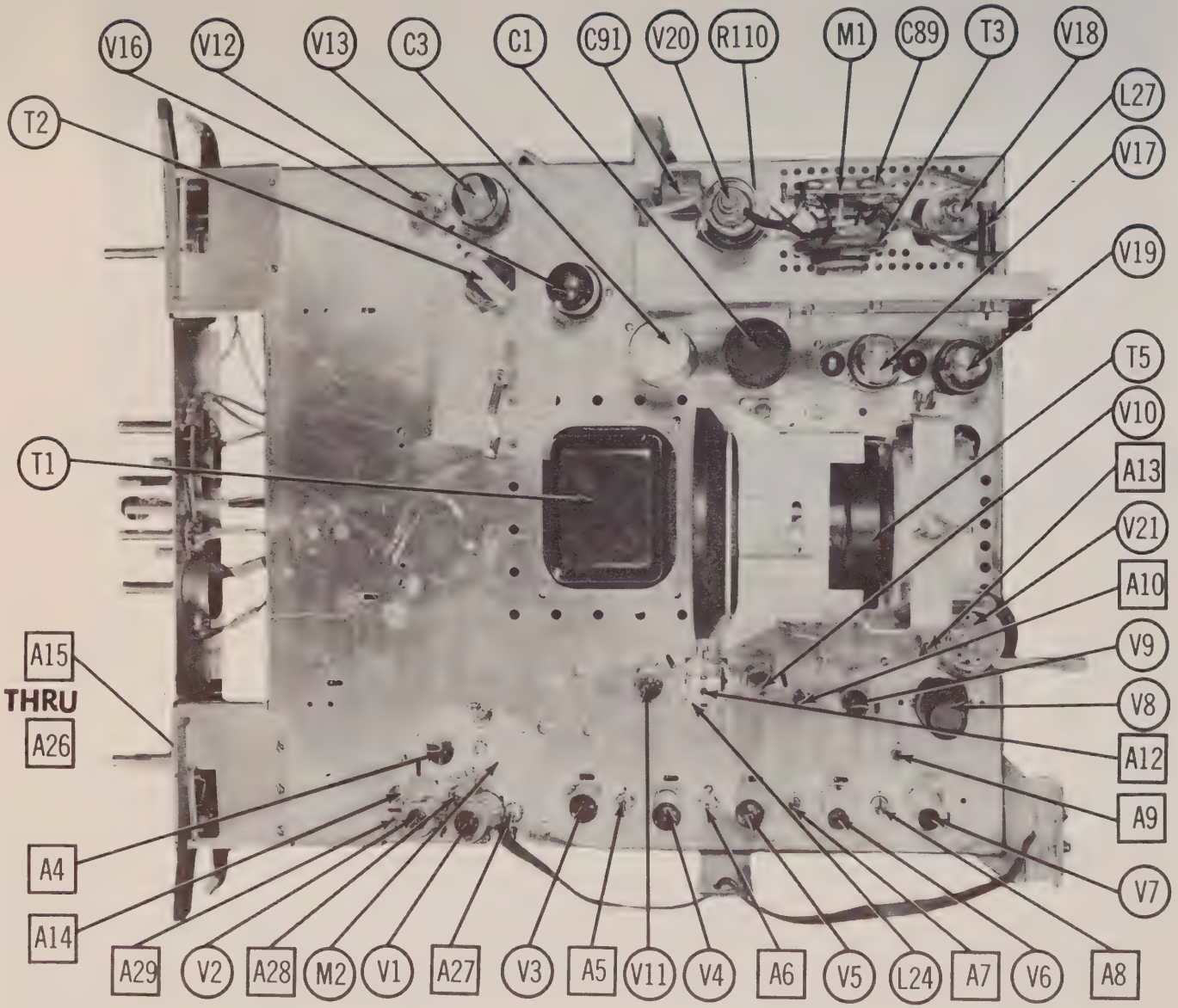

CHASSIS TOP VIEW

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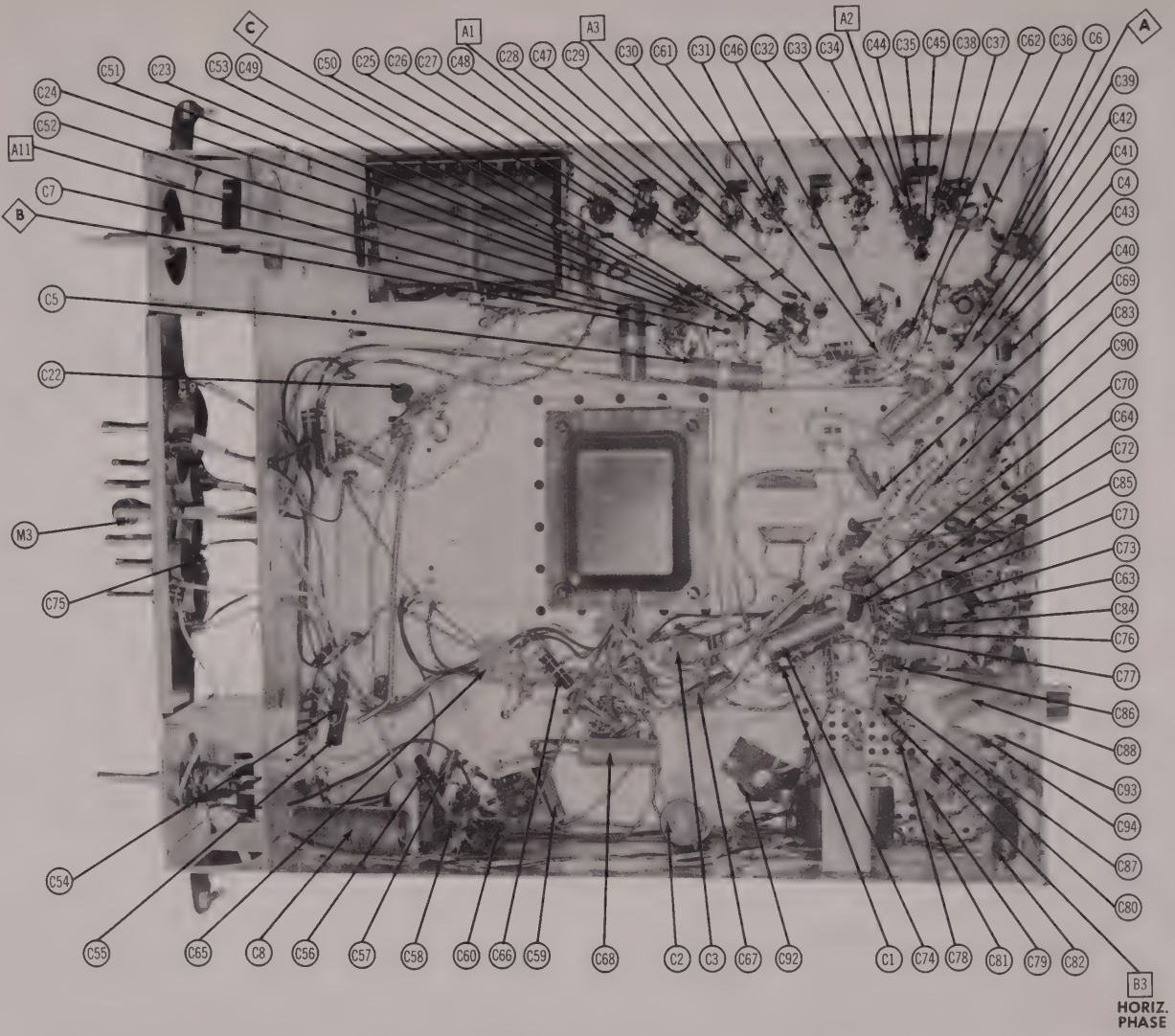
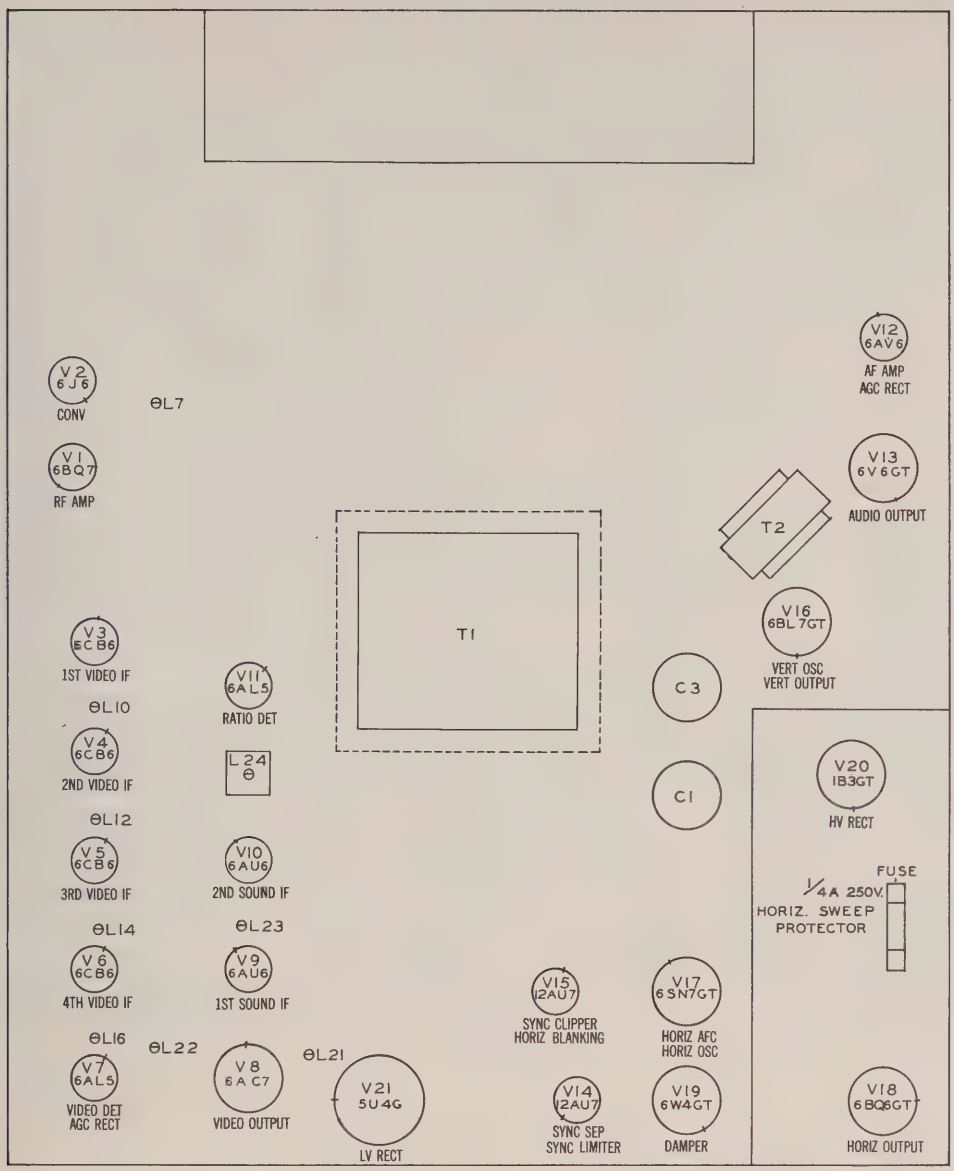


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART

DENVER, COLORADO



TOP VIEW

TUBE FAILURE CHECK CHART

The following chart lists tube whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-V21

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V6, V7, V13
No pic, no sound, has snow-V1, V2, V3
No pic, has sound, has raster-V8, V22
Has pic, no sound-V9, V10, V11, V12, V13
Overloaded picture-V7

SYNC FAILURE
No vert. sync. V15, V16
No horiz. sync. -V15, V17
No vert. or horiz. sync. -V14, V15

SWEEP FAILURE
No raster, has sound-V17, V18, V19, V20, V22, Fuse (M1)
No vertical deflection-V16
Poor vert. linearityor foldover-V16
Poor horiz. linearity or foldover-V17, V18, V19
Narrow picture-V17, V18, V19, V20,V21
Vert. off freq.-V16
Horiz. off freq. -V15, V17

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal oscillator tube, V17, from its socket. Set the local-fringe switch to local.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 1.5 volt battery to the ungrounded side fo C6. Connect the postive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an unground ed tube shield floating over dummy converter. Low side to chassis.	27.25MC (Unmod)	Any	DC prove to point (A) Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	19.75MC	"	"	A2	"
3.	"	"	21.25MC	"	"	A3	"
4.	"	"	22 MC	"	"	A4	Adjust maximum deflection.
5.	"	"	25.5MC	"	"	A5	"
6.	"	"	22.75MC	"	"	A6	"
7.	"	"	25.0MC	"	"	A7	"
8.	"	"	23.75MC	"	"	A8	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	19.75MC 21.25MC 22.75MC 25.75MC 27.25MC	Any	Vert. Amp. to point (A). Low side to Chassis.		Check for response curve similar to fig.1. If necessary slightly retouch A4 thru A8 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Set the contrast control to maximum

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B) Common to chassis.	A9, A10, A11	Adjust for maximum deflection.
11.	"	"	"	"	DC probe to point (C) Common to chassis.	A12	Adjust for zero reading. A positive and negative reading will be obtained oneither side to the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.
Set contrast control to maximum.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert.Amp. to point (B) Low side to chassis.	A9, A10, A11	Disconnect stabilizer capacitor C7. Adjust for curve of maximum amplitude and symmetry as per fig. 2.
11.	"	"	"	"	"	Vert.Amp. to point (C) Low side to chassis.	A12	Reconnect capacitor C7. Adjust so that 4.5MC occurs at center of crossover lines as in fig. 3. SLIGHTLY retouch A11 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (Unmod)	Any	DC prove thru detector (fig. 4) to pin 11 of picture tube. Common to chassis.	A13	Adjust for MINIMUM deflection.

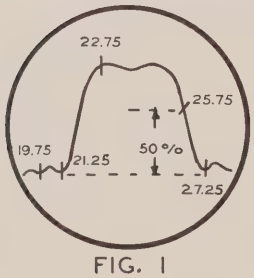


FIG. 1

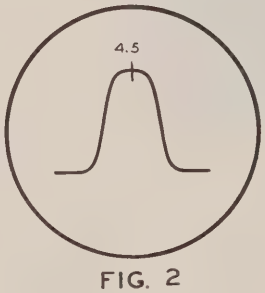


FIG. 2

FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary.
If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A14.
It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct any individual channel.
If adjustment of A14 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel adjustment screws are reached through a hole just to the right of the channel switch shaft.
The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. to point (A). Low side to chassis.	A15	Adjust to place sound marker in notch as in fig. 5. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A16	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A17	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A18	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A19	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A20	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A21	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A22	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A23	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A24	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A25	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A26	

RF IF MIXER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp to point (A). Low side to chassis.	A27, A28, A29	Adjust for response curve similar to fig. 6 with markers above 90%.
15.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response curve similar to fig. 6. If markers fall below 70% on any channel make slight compromise adjustments of A27 A28 and A29 with channel switch set to that channel, then recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177.MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

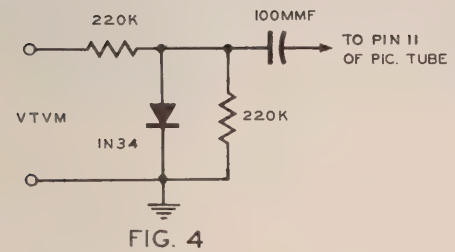


FIG. 4

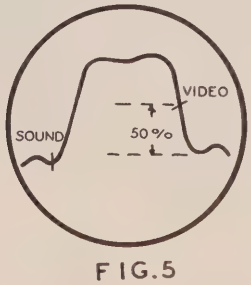


FIG.5

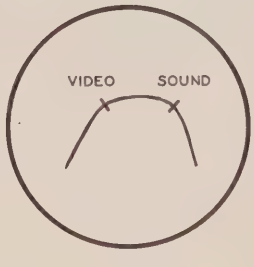


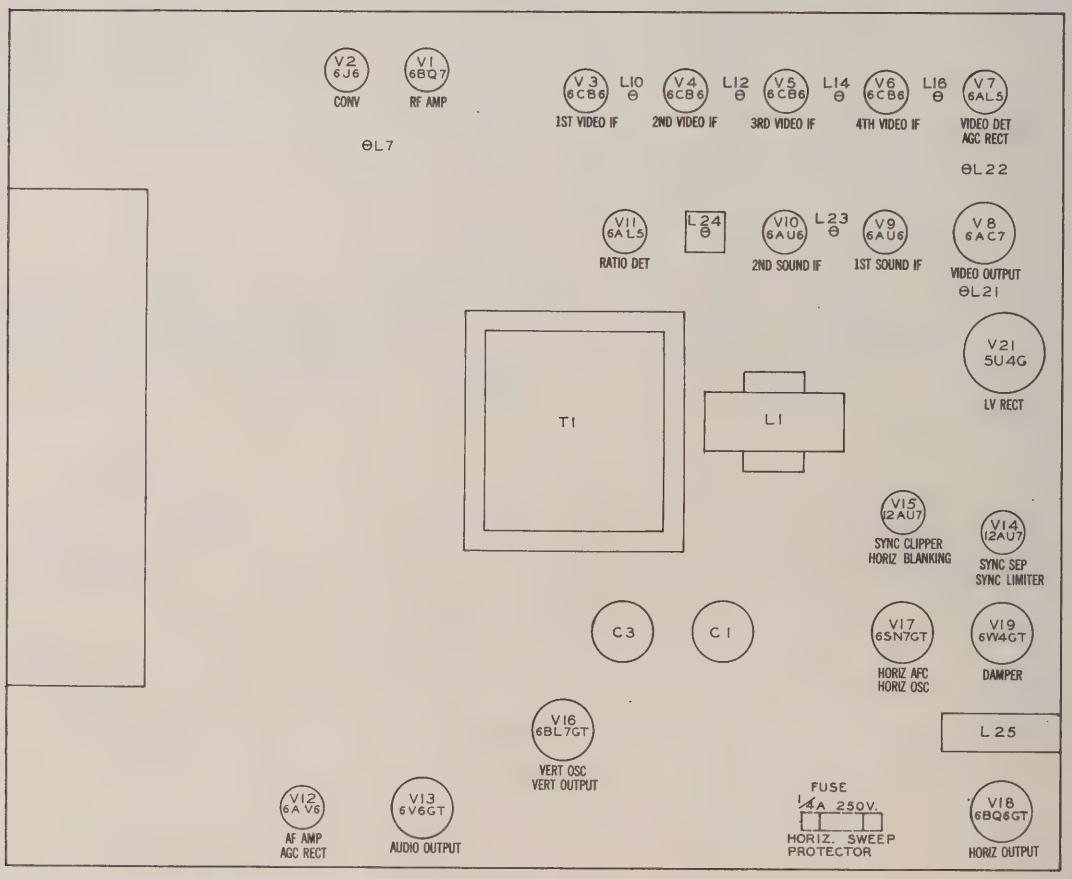
FIG. 6

OLYMPIC
MODELS 21C28, 21D29, 21K26, 21T27

RESISTANCE MEASUREMENTS

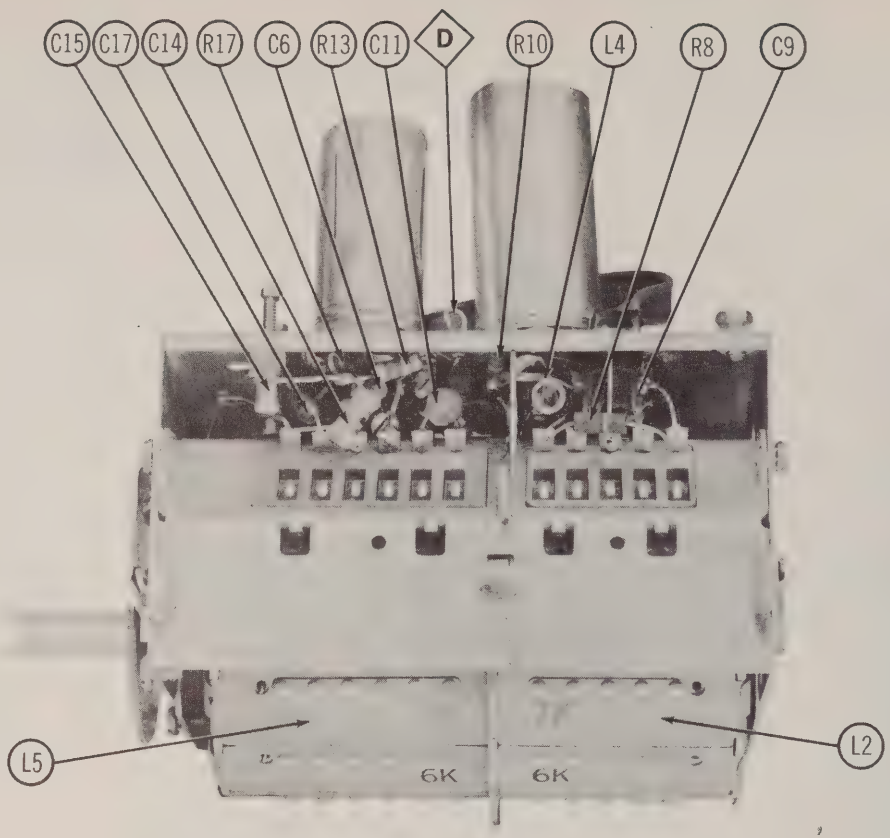
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	147KΩ	0Ω	.1Ω	0Ω	†4.1KΩ	†110KΩ	INF	0Ω
V 2	6J6	†20KΩ	†25KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6BC6	160KΩ	68Ω	.1Ω	0Ω	■990Ω	■990Ω	0Ω		
V 4	6CB6	150KΩ	68Ω	.1Ω	0Ω	■660Ω	■660Ω	0Ω		
V 5	6CB6	150KΩ	68Ω	.1Ω	0Ω	■330Ω	■330Ω	0Ω		
V 6	6CB6	.3Ω	220Ω	.1Ω	0Ω	■660Ω	■660Ω	0Ω		
V 7	6AL5	.2Ω	175KΩ	.1Ω	0Ω	3.3KΩ	0Ω	3.9KΩ		
V 8	6AC7	0Ω	0Ω	0Ω	470KΩ	290Ω	†60KΩ	.1Ω	†12KΩ	
V 9	6AU6	1.6Ω	0Ω	0Ω	.1Ω	†11KΩ	†11KΩ	150Ω		
V 10	6AU6	100KΩ	0Ω	0Ω	.1Ω	†11KΩ	†57KΩ	0Ω		
V 11	6AL5	15KΩ	15KΩ	.1Ω	0Ω	INF	0Ω	INF		
V 12	6AV6	10Meg	0Ω	0Ω	.1Ω	150KΩ	150KΩ	†470KΩ		
V 13	6V6GT	INF	¶0Ω	†880Ω	†452Ω	210KΩ	120KΩ	¶.1Ω	55KΩ	
V 14	12AU7	22KΩ	0Ω	220KΩ	.1Ω	.1Ω	†36KΩ	2.2Meg	0Ω	0Ω
V 15	12AU7	†25KΩ	900KΩ	0Ω	.1Ω	.1Ω	†10KΩ	470KΩ	15KΩ	0Ω
V 16	6BL7GT	1.8 Meg.	†2.3Meg	0Ω	1 Meg	†2.1KΩ	610Ω	0Ω	.1Ω	
V 17	6SN7GT	710KΩ	†75KΩ	300KΩ	250KΩ	†33KΩ	0Ω	0Ω	.1Ω	
V 18	6BQ6GT	INF	0Ω	INF	†10KΩ	470KΩ	470KΩ	.1Ω	100Ω	Top Cap #82Ω
V 19	6W4GT	INF	INF	1.4Meg	INF	†410Ω	INF	.1Ω	0Ω	
V 20	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap #402Ω
V 21	5U4G	INF	11KΩ	INF	25Ω	INF	24Ω	INF	11KΩ	
V 22	21AP4	¶0Ω	470KΩ	Pin 10 #280KΩ	Pin 11 230 KΩ	Pin 12 ¶.1Ω				

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
LOCAL & FRINGE SWITCH IN "FRINGE" POSITION
† MEASURED FROM PIN 2 OF V21
# MEASURED FROM PIN 3 OF V19
■ MEASURED FROM 155VCD LINE
¶ MEASURED FROM PIN 2 OF V13

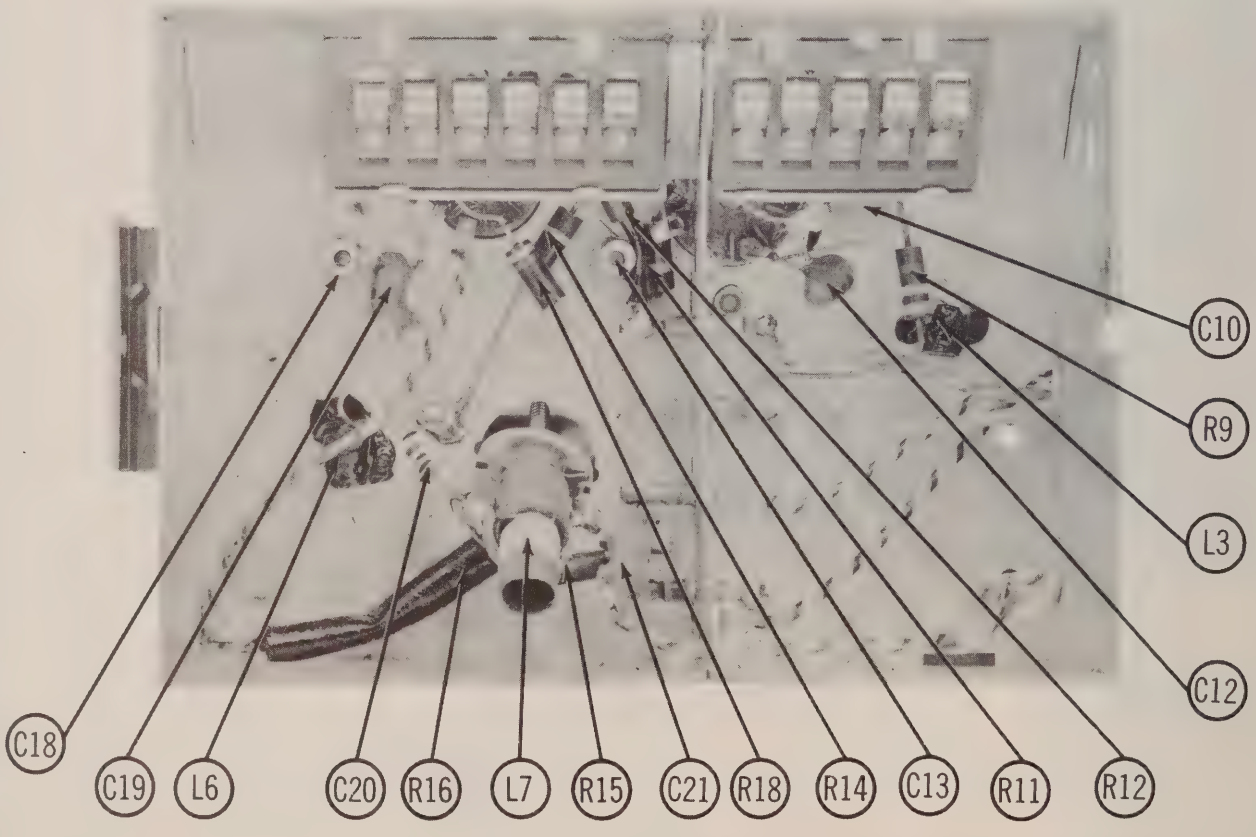


BOTTOM VIEW

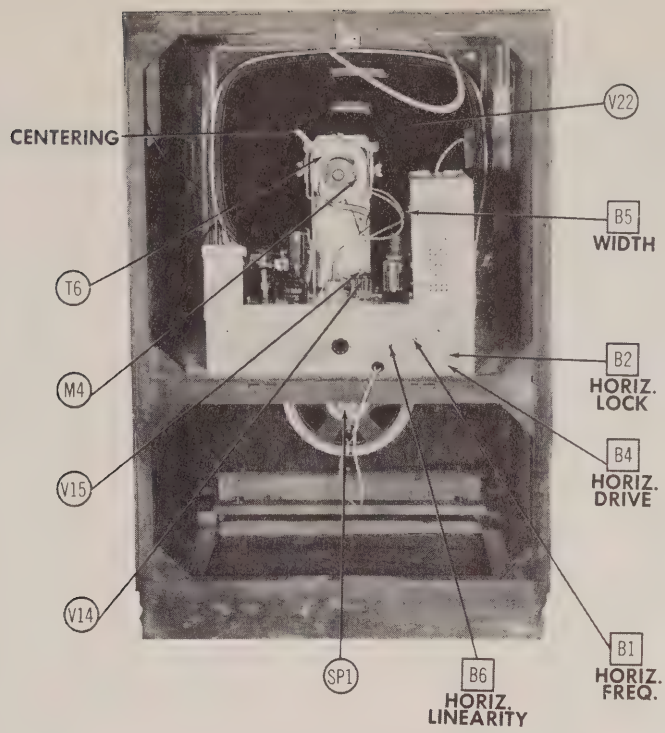
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.
Under normal operation with a strong signal the picture should remain in horizontal sync at all positions of the horizontal hold control except at extreme clockwise position, where the blanking bar may become visible and shift from side to side.
With a weak signal, loss of sync may occur at extreme counter clockwise positions.
If slight adjustment of the horizontal frequency slug (B1) fails to yield satisfactory sync as above it may be necessary to adjust the horizontal lock trimmer (B2) and the horizontal waveform slug (B3).
Connect a short between terminals "C" and "D" of L28.
Connect the vertical input lead of an oscilloscope through a 1 meg ohm resistor to terminal "C" of L28.
Set B2 one turn from fully clockwise.
Set horizontal hold control fully clockwise.
Adjust B1 until picture falls into sync, then turn counter clockwise until blanking bar shows, or three or four diagonal bars appear, sloping downward to the right. If unable to synchronize through adjustment of B1, turn B2 slightly clockwise and repeat adjustment of B1.
Remove short across "C" and "D" and adjust B3 for a waveform on scope as in fig. 7.
The broad and sharp peaks should be of equal height. While adjusting B3 keep the picture in sync, if necessary, by adjusting B1.
Turn the horizontal hold control fully counter clockwise and momentarily switch to another channel and back again. If the picture is not out of sync adjust B1 slightly and interrupt the signal again, repeating the procedure until the picture is out of sync with several diagonal sloping bars. Turn the horizontal hold control slowly clockwise, noting the least number of bars just before picture pulls into sync.
If more than three are present adjust B2 slightly clockwise. If less than two are present adjust B2 counter clockwise.
Adjust the horizontal drive trimmer (B4) for the best compromise between brightness and linearity. Recheck adjustment of B1.
Adjust the width slug (B5) for a picture slightly wider than necessary to fill the picture mask horizontally.
Adjust the horizontal linearity slug (B6) for best linearity in the right half of the picture.

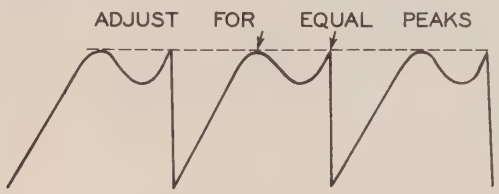


FIG. 7

DISASSEMBLY INSTRUCTIONS

1. Remove 4 control knobs from front panel.
2. Remove 4 screws. Remove rear cover.
3. Disconnect built-in antenna & speaker.
4. Remove 4 chassis bolts. Remove chassis.
5. Remove 4 speaker nuts. Remove speaker.

NOTE:
FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6BQ7	9AJ		
B	RF Amplifier	6BK7	9AJ		
V2	Converter	6J6	7B9		
V3	1st. Video IF Amp.	6C B6	7C M		
V4	2nd. Video IF Amp.	6C B6	7C M		
V5	3rd. Video IF Amp.	6C B6	7C M		
V6	4th. Video IF Amp.	6C B6	7C M		
V7	Video Detector-AGC Rectifier	6AL5	6BT		
V8	Video Output	6AC7	8N		
V9	1st. Sound IF Amp.	6AU6	7BK		
V10	2nd. Sound IF Amp.	6AU6	7BK		
V11	Ratio Detector	6AL5	6BT		
V12	AF Amplifier-AGC Clamper	6AV6	7BT		
V13	Audio Output	6V6GT	7AC		
V14	Sync Separator-Sync Limiter	12AU7	9A		
V15	Sync Clipper-Horiz. Blanking	12AU7	9A		
V16	Vert. Oscillator-Vert. Output	6BL7GT	8BD		
V17	Horiz. AFC-Horiz. Oscillator	6SN7GT	6BD		
V18	Horiz. Output	6BQ6GT	6AM		
V19	Damper	6W4GT	4CG		
V20	HV Rectifier	1B3GT	3C		
V21	LV Rectifier	5U4G	5T		

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: OLYMPIC PART No	SYLVANIA PART No.	RMA BASE TYPE	NOTES
V22	21AP4	21AP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OLYMPIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	[illegible] PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450	CO-2067-1	AFH3-199		UPT4445		FP428.4	TVL-4720	
B	▲40	450				3335				
C	▲60	200								
C2	30	450	CO-2560	PRS450/20		BR2045A		TC75	TVA-1709	
C3A	▲80	450	CO-2066	AFH4-87		UPT403		FP245	TVL-2778	
B	▲10	450						TC495	TVA-1311	
C	▲125	25								
C4	4	450	CO-1056	PRS450/4		BR445		TC70	TVA-1702	
C5	4	450	CO-1056	PRS450/4		BR445		TC70	TVA-1702	
C6	4	450	CO-1056	PRS450/4		BR445		TC70	TVA-1702	
C7	4	450	CO-1056	PRS450/4		BR445		TC70	TVA-1702	
C8	50	350	CO-2344	PRS450/40		BR4035		TC68	TVA-1713	
C9	2.2				TCZ-2.2		NP0K-2R2			
C10	3-9				829-10					
C11	120			SII20	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C12	1000			SII000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C13	.5-3				829-2			CT585A		
C14	100			SII00	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C15	.5-3				829-3			CT565A		
C16	20			SI20NP0	TCZ-20		NP0K-200	ZT-542	5TCC-Q2	
C17	10			SI10N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C18	.5-3				829-3			CT565A		
C19	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C20	10			SII0NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C21	120			SII20	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C22	5000		CCD-502X	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C23	1500		CCR-152X	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C24A	1500		CCD-152X	BPD-2X0015	DD-2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	Note 1
B	1500									
C25A	1500		CC2D-152X	BPD-2X0015	DD-2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C26	47				TCN-47		N750 L-470	NT-5447	5TCU-Q47	
C27	1500		CCR-152X	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C28A	1500		CC2D-152X	BPD-2X0015	DD-2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C29	56				TCN-56		N750L-560			
C30	1500		CCR-152X	BPD-0015	DD-152	TM5D15	801-0015	DC-525	5HK-D15	
C31A	1500		CC2D-152X	BPD-2X0015	DD-2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C32A	1500		CC2D-152X	BPD-2X0015	DD-2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C33	1500		CCR-152X	BPD-0015	DD-152	TM5D15	801-0015	DC-152	5HK-D15	
C34	56	500								
C35	100	500	RCM20A101M	1468-0001	D6-101	5W5T1	GP1K-101	MC-235	1FM-31	
C36	1500		CCR-152X	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C37A	1500		CC2D-152X	BPD-2X0015	DD-2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	
B	1500									
C38	4	1500	CO-1915						4TM-P1	
C39	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C40	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C41	220	500	RCM20A221M	1468-00025	D6-221	5W5T2	GP2K-221	MC240	1FM-325	
C42	47			SI47NP0	TCZ-47		NP0K-470		5TCC-Q47	
C43	.22	400		P488-22		PTE4P22		PT4025	4TM-P22	
C44	4	1500	CO-1915							
C45	47			SI47NP0	TCZ-47		NP0K-470		5TCC-Q47	
C46	5000		CCD-502X	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	
C47	47			SI47NP0	TCZ-47		NP0K-47		5TCC-Q47	
C48	47	500	RCM20A470M	1468-00005	D6-470	5W5Q5	GP1K-470	MC225	1FM-45	
C49	5000		CCD-502X	BPD-005	DD-502	TM5D5	811-005	DC-525	5HK-D5	

Note 1. Not used in all Models.
Note 2. Some Models use 180MMF in this application (Part #CCD-U181K)
Note 3. Not used when C78 is 180MMF
Note 4. Some Models use .1MFD in this application.
Note 5. Not used when C86 is .1MFD.
♦ Items C85A, C85B, C85C, R80A, R80B, R80C are combined in one unit.

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OLYMPIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C50	5000		CCD-502X	BPD-005	DD-502	TM5D5		811-005	DC-525	5HK-D5
C51	330	500	RCM20A331M	1469-00035	D6-331		GP2K 331	UC-5333	1FM-335	
C52	330	500	RCM20A331M	1469-00035	D6-331		GP2K 331	UC-5333	1FM-335	
C53	330	500	RCM20A331M	1469-00035	D6-331		GP2K-331	UC-5333	1FM-335	
C54	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C55	.01	600		P688-01	D6-103	PTE6S1	GP2 333 103	PT611	6TM-S1	
C56	.01	600		P688-01	D6-103	PTE6S1	GP2 333 103	PT611	6TM-S1	
C57	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C58	.01	600		P688-01	D6 103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C59	.05	400		P488 05	DF-503	PTE4S5		PT415	4TM-S5	
C60	.01	600		P688-01	D6 103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C61	100	500	RCM20A101M	1468-0001	D6-101	5W5T1	GP1K-101	MC 235	1F M-31	
C62	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C63	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C64	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C65A	.002			P688-002		PTE6D2		PT622		
B	.005		♦PC-2435	P688-005	♦PC-100	PTE6D5	♦1405-01	PT625	♦10IL1	
C	.005			P688-005		PTE6D5		PT625		
C66	.0047	600	CO-O-6472K	P688-0047		PTE6D47		PT6247	6TM-D47	
C67	.05	400		P488-05		PTE4S5		PT415	4TM-S5	
C68	.22	400		P488-22		PTE4S22		PT4025	4TM-P22	
C69	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C70	.47	500	RCM20A470M	1468-00005	D6-470	5W5Q5	GP1K-470	MC225	1F M-45	
C71	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C72	.47	500	RCM20A470M	1468-00005	D6-470	5W5Q5	GP1K-470	MC225	1F M-45	
C73	.05	400		P488-05	DF-203	PTE4S2		PT412	4TM-S2	
C74	.22	400		P488-22		PTE4P22		PT4025	4TM-P22	
C75	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C76	.47	500		1469-00005		NP5Q5		MC 2225	1FM-45	Note 2
C77	150									Note 3
C78	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C79	.0022	600	CO-O-6222J	P688-0022		PTE6D22		PT6222	6TM-D22	
C80	680	500	RCM30A681M	1479-0007		1W5T7			MS-37	
C81	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C82	.22	400		P488-22		PTE4P22		PT4025	4TM-P22	
C83	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C84	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C85	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C86	.047	1000	CO-O-X503	PI088-047				PT1615	TR-15	Note 4
C87	.047	1000		PI088-047				PT1615	TR-15	Note 5
C88	.035	1000	CO-O-X353	PI088-033						
C89	.047	400		P488-047		PTE4S47		PT4147	4TM-S47	
C90	.047	1000	CO-O-X503	PI088-47				PT1615	TR-15	
C91	500	20000	CO-2600	HV20C	TV3-502	MM-C20T5	413-501		20DK-T5	
C92	500	20000	CO-2600	HV20C	TV3-502	MM-C20T5	413-501		20DK-T5	
C93	.01	600		6892GZKY-01		P265I		PT611	6TM-S1	
C94	.01	600		6897CKY-01		P265I		PT611	6TM-S1	

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	50KΩ	½	PT-2268	QII-123	AG-44-S	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KSB-3	AK-4	Not Req.	Attach to R1A
R2A	5000Ω	½	PT-2271	QII-114	AG-19-S	AB-10	U-14	Vert Linearity
B	Shaft		Not Req.	Not Req.	KSB-3	AK-4	Not Req.	Attach to R2A
R3A	1 Meg	½	PT-2269	QII-137	AG-61-S	AB-59	U-54	Vert Hold
B	Shaft		Not Req.	Not Req.	KSB-3	AK-4	Not Req.	Attach to R3A
R4A	500KΩ	½	PT-2270	QII-133	AG-58-S	AB-56	U-50	Brightness
B	Shaft		Not Req.	Not Req.	KSB-3	AK-4	Not Req.	Attach to R4A
R5A	2.5Meg	½	PT-2272	QII-239	AG-64-S	AB-63	U-255	Height
B	Shaft		Not Req.	Not Req.	KSB-3	AK-4	Not Req.	Attach to R5A
R6	2250Ω	4	PT-2273		RTV-319		TVF-143	Focus-Wire wound
R7A	500Ω	½	PT-2267	QJ-34 ♦	RTV-100	SBB-856-S	UF53R	Contrast-Panel
B	1 Meg	½					UR16A	Volume-Rear
C	Switch						US-26	Attach to R7B

♦ CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B17-1I4 & P1-121 (Panel) B13-137 & R1-207 (Rear) & SWITCH 76-L.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: OLYMPIC PART No.	IRC PART No.	NOTES
R8	22KΩ	½		BTS-47K	
R9	47KΩ	½		BTS-220K	
R10	220KΩ	½		BTS-180K-5%	
R11	180K-5%	½		BTS-1000	
R12	1000Ω	½		BTS-4700	
R13	4700Ω	½		BTS-220K	
R14	220KΩ	½		BTS-22K	
R15	15KΩ	½		BTS-10K	
R16	10Ω	½		BTS-10K	
R17	10KΩ	½		BTS-10K	
R18	10KΩ	½		BTS-100K	
R19	100KΩ	½		BTS-100K	
R20	100KΩ	½		BTS-330	
R21	10KΩ	½			
R22	68Ω	½			
R23	330Ω	½		BTS-330	
R24	1000Ω	½		BTS-1000	
R25	10KΩ	½			
R26	68Ω	½			
R27	330Ω	½		BTS-330	
R28	1000Ω	½		BTS-1000	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: OLYMPIC PART No.	IRC PART No.	NOTES
R29	10KΩ	½		BTS-10K	
R30	68Ω	½			
R31	330Ω	½		BTS-330	
R32	330Ω	½		BTS-330	
R33	330Ω	½		BTS-330	
R34	5600Ω	½			
R35	220Ω	½		BTS-220	
R36	22KΩ	½		BTS-22K	
R37	22KΩ	½		BTS-22K	
R38	470KΩ	½		BTS-470K	
R39	3300Ω	½		BTS-3300	
R40	470KΩ	½		BTS-470K	
R41	3900Ω	½		BTS-3900	
R42	3300Ω	½		BTS-3300	
R43	1000Ω	½		BTS-1000	
R44	470KΩ	½		BTS-470K	
R45	56KΩ	1		BTA-56K	
R46	6800Ω	2		BTB-6800	
R47	47000Ω	2		BTB-47000	
R48	10KΩ	½		BTS-10K	
R49	15KΩ	½		BTS-15K	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: OLYMPIC PART No.	IRC PART No.	NOTES
R50	33KΩ	½		BTS-33K	
R51	120KΩ	½		BTS 120K	
R52	470KΩ	½		BTS-470K	
R53	150Ω	½		BTS-150	
R54	1000Ω	½		BTS-1000	
R55	100KΩ	½		BTS-100K	
R56	47KΩ	½			
R57	1000Ω	½		BTS-1000	
R58	47Ω	½			
R59	22KΩ	½		BTS-22K	
R60	15KΩ	½		BTS-15K	
R61	15KΩ	½		BTS-15K	
R62	10Meg	½		BTS-10Meg	
R63	470KΩ	½		BTS-470K	
R64	330KΩ	½		BTS-330K	
R65	180KΩ	½		BTS-180k	
R66	82KΩ	½		BTS-82K	
R67	390Ω	2		BW-2-390	
R68	470KΩ	½		BTS-470K	
R69	2.2Meg	½		BTS-2.2Meg	
R70	33KΩ	½		BTA-33K	
R71	220KΩ	½		BTS-220K	
R72	220KΩ	½		BTS-220K	
R73	22K↓	½		BTS-22K	
R74	2.2Meg	½		BTS-2.2Meg	
R75	1.5Meg	½		BTS-1.5Meg	
R76	33KΩ	2		BTB-33K	
R77	15KΩ	½		BTS-15K	
R78	33KΩ	½		BTS-33K	
R79	82KΩ	½		BTS 82K	
R80A	22KΩ	½		BTS-22K	
B	8200Ω	½	♦PC-2435	BTS-8200	
C	8200Ω	½		BTS-8200	
R81	1.5Meg	½		BTS-1.5Meg	
R82	1.5Meg	½		BTS-1.5Meg	

ITEM No	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: OLYMPIC PART No.	IRC PART No.	NOTES
R83	5800Ω	½		BTS 5800	
R84	1 Meg.	½		BTS-1Meg	
R85	330Ω	½		BTS-330	
R86	1000Ω	½		BTS-1000	
R87	100KΩ	½		BTS-100K	
R88	560KΩ	½		BTS-560K	
R89	150KΩ	½		BTS-150K	
R90	150KΩ	½		BTS-150K	
R91	8200Ω	½		BTS-8200	
R92	150KΩ	½		BTS-150K	
R93	3.3Meg	½		BTA-3.3Meg	
R94	100KΩ-5%	½		BTS-100-5%	
R95	120KΩ	½		BTS-120K	
R96	100KΩ 5%	½		BTA-100K-5%	
R97	8200Ω	½		BTS-8200	
R98	22KΩ	½		BTS 22K	
R99	33KΩ	½		BTA-33K	
R100	39Ω	½			
R101	470KΩ	½		BTS-470K	
R102	100Ω	1		BTA-100	
R103	6800Ω	2		BTB-6800	
R104	15KΩ	½		BTS-15K	
R105	10KΩ	½		BTS-10K	
R106	470KΩ	½		BTS-470K	
R107	33KΩ	½		BTS-33K	
R108	330KΩ	½		BTS-330K	
R109	1 Meg	½		BTS-1Meg	
R110	1 Meg	2			
R111	3300Ω	2		BTB-3300	
R112	3300Ω	2		BTB-3300	
R113	3300Ω	2		BTB-3300	
R114	33Ω	1			
R115A	2750Ω	15	♦RE-2627		
B	15KΩ	7.5			
R116	470Ω	2		BW-2-470	
R117	100KΩ	1		BTA-100K	

♦ Items R80A, R80B, R80C, C85A, C85B, C85C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: OLYMPIC PART No.	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No
T1	117VAC @1.84A	735V CT .200ADC	5VAC @ 3A	6.3VAC @ 6A SEC. 4 6.3VAC 1.1A	TR-1968-1 ①	P-8169 ①	P-3059	TP-360	R-37BC

① Parallel both 6 Volt, 5 & 7 Amp. windings and use for Sec. 3.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: OLYMPIC PART No.	STANCOR PART No	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T2	180Ω	970Ω	TR-1473	A-8125	A-3000 ①	TBO-1 ②	A-97X	Vert Osc. Trans.
T3	370ΩTap @ 50Ω	10.30Tap @ 6Ω, 7.2Ω	TR-2615	A-8130 ③	HVO-7 ④			Horiz. Output Trans.
T4	680Ω	6Ω	TR-2189-A TR-2189 ⑤	A8112 ①	A-3038	TSO-5	A-99X	Vert Output Trans.
T5A	14Ω		CL-2087-2	DY-8	MFD-70	TY-2	Y-12	Horiz. Deflection Coils
B	50Ω							Vert. Deflection Coils
T6	425Ω		CL-2300-1	FC-11 ⑥		TC-2 ⑥	B-470-R ⑥	Focus Coil

① Drill one new mtg. hole.
② Mount on top of chassis.
③ Use with WC-5 Width coil.
④ Use with MWC-1 Width coil.
⑤ Alternate Vert. Output trans.
⑥ Fabricate new mtg. bracket.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES PRI.	RATING: DC RES SEC.	REPLACEMENT DATA: OLYMPIC PART No.	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No	NOTES
T7	7KΩ	3.3Ω	430Ω	.56Ω	TR-2686	A-3849	A-3020	RO-13 ①	S-7X	① Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: OLYMPIC PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	10"	PM	3.3Ω	SK-1789-1 SK-1788 ①	10J11	10A51	① Alternate

① Alternate 5" PM speaker used in model 21T27.

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ^)	REPLACEMENT DATA: OLYMPIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.200A	63Ω	2.1HY	CK-1346	C-2326 ①	C-3991 ①	TR3300 ①	C-25A

① Drill one newmtg. hole.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

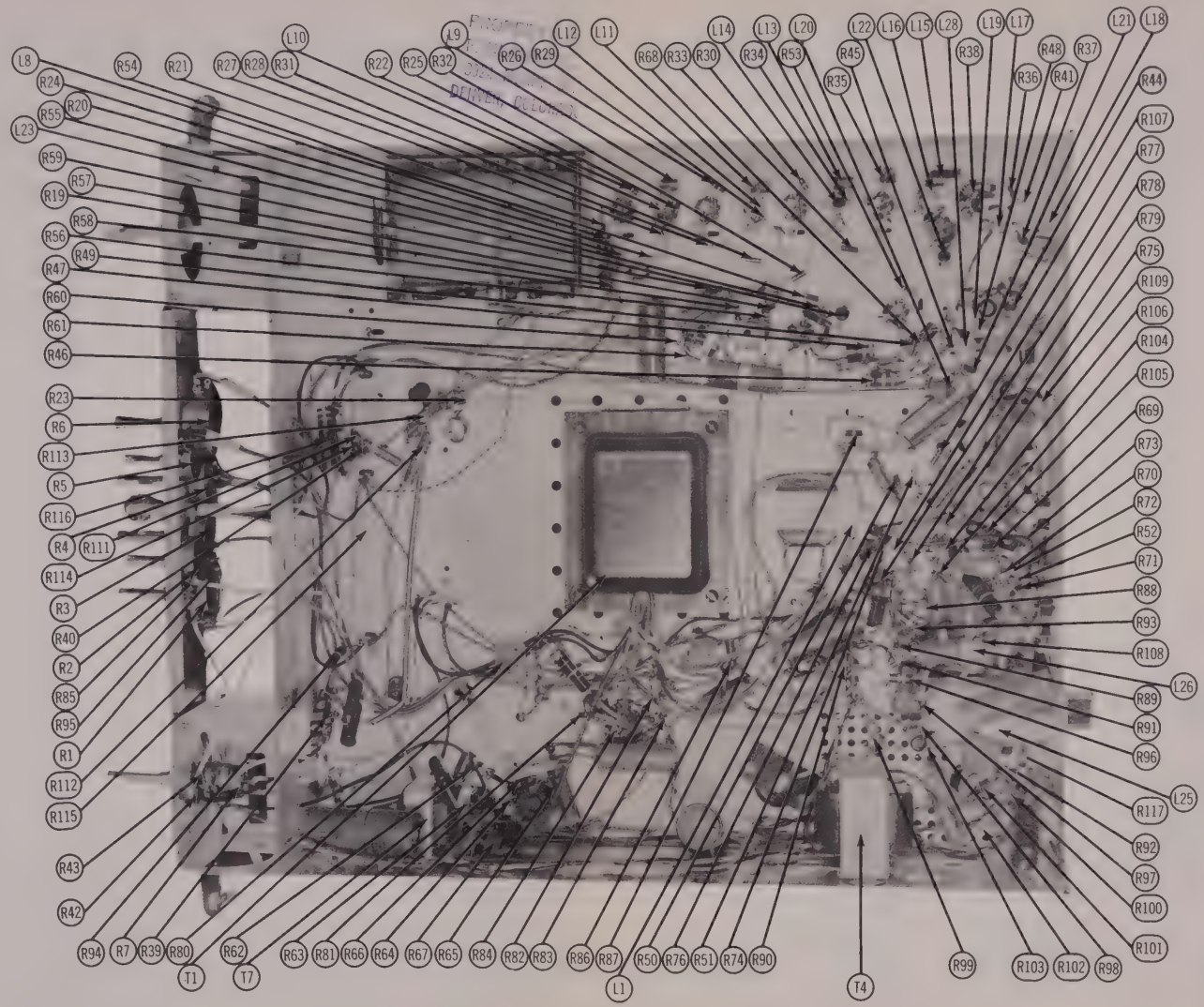
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	OLYMPIC PART No.	MERIT PART No.	
L2	Ant. Coils	0Ω	0Ω			
L3	Fil. Choke	0Ω				
L4	RF Choke	0Ω				
L5	RF Mixer Grid & Osc. Coils	0Ω				
L6	Fil Choke	0Ω				
L7	1st Video IF	.8Ω				
L8	Fil Choke	0Ω		CL-2427		
L9	Fil Choke	0Ω		CL-2427		
L10	2nd Video IF	.2Ω	.2Ω	CL-2619		Includes Trap
L11	Fil Choke	0Ω		CL-2427		
L12	3rd Video IF	.2Ω	.2Ω	CL-2619		Includes Trap
L13	Fil Choke	0Ω		CL-2427		
L14	4th. Video IF	.3Ω	.3Ω	CL-2309		
L15	Fil Choke	9Ω		CL-2427		
L16	5th. Video IF	.2Ω	.2Ω	CL-2620		Includes Trap
L17	Series Peaking Coil	2.5Ω		CL-1535	TV-180	36 Microheneries
L18	Shunt Peaking Coil	11.5Ω		CL-2614		500 Microheneries
L19	Series Peaking Coil	5Ω		CL-1536		130 Microheneries-Some models use 120 Microheneries.
L20	Shunt Peaking Coil	7.8Ω		CL-2073	TV-185	250 Microheneries
L21	4.5MC Trap	1.6Ω		CL-2331	TV-151	
L22	1st. Sound IF	1.6Ω		CL-2331		
L23	2nd Sound IF	1.6Ω				
L24	Ratio Det.	5.2Ω	2Ω CT	TR-2630		Tertiary winding -. 7Ω
L25	Horiz. Osc.	120Ω	37Ω	TR-2294		Pri. Tapped @ 35Ω
L26	Horiz. Lin.	32Ω		CL-2678	MWC-1	
L27	Width Coil	.7Ω		CL-1502	MWC-2	
L28	Series Peaking Coil	5Ω		CL-1536		115 Microheneries-Not used in all models.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			OLYMPIC PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	Bel	1/4A 250V.	FU-1683		318.250 (3AG-P/T)		GJV-1/4	

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M2	RF Tuner	CL-2608-21	Complete with tubes
M3	Switch	SW-2012	Local & Fringe
M4	Ion Trap	PP-2248	
B2, B4	Trimmer	CT-2612	Dual Horiz. Lock (10-160MMF) Horiz. Drive (50-370MMF)
	Knob	KN2295-1	Channel Selector (Mahogany)
	Knob	KN2296	Fine Tuning (Mahogany)
	Knob	KN2297-1	Off/On Volume (Mahogany)
	Knob	KN2298	Contrast (Mahogany)
	Knob	KN2545	Channel Selector (Blonde)
	Knob	KN2546	Fine Tuning (Blonde)
	Knob	KN2547	Off/On Volume (Bonde)
	Knob	KN2548	Contrast (Blonde)
	Escutcheon	MP2616	Front Panel
	Safety Glass	PP2647	
	Mask	PP2649	
	Back Cover	ST2654	Model 21K26
	Back Cover	ST2655	Model 21C28
	Back Cover	ST2656	Model 21D29
	Back Cover	ST2711	Radio (Model 21K26)
	Moulded Cup	MP2601	Back Cover for Picture Tube



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST
DENVER, COLORADO

RCA VICTOR
MODEL 2US7 (Ch. RC-1117A)

RCA VICTOR
MODEL 2US7 (Ch. RC-1117A)

TRADE NAME	RCA Victor Model 2US7 (Ch. RC-1117A)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, N.J.
TYPE SET	AC Operated AM-Phono Combination Superheterodyne Receiver
TUBES (SIX)	Types 12BE6 Conv., 12BA6 IF Amp., 6AQ6 Det.-AVC-AF Amp., 6AQ6 Phase Inv., (2) 35C5 Audio Output.
POWER SUPPLY	110–120 Volts AC-60 Cycle
RATING	.31 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn tuning gang fully closed and set pointer to last index mark on left of dial back plate.
Set function selector switch to third clockwise position.
Use isolation transformer, if available, If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator, plates, rear section of tuning gang. Low side to B-.	455KC (400~Mod)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		"	1600KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	600KC	Tune to 600KC signal.	"		Check for tracking at 600KC. If necessary bend outside plates of rear section of tuning gang for optimum tracking.

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT RCA SERIES 930409-SEE SIMILAR V-M MODEL 950-PHOTOFACT SET #107 FOLDER #13 OR RECORD CHANGER MANUAL CM-3.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		RCA PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA5	12BA6	7BK	
V3	Det-AVC-AF Amp	6AQ6	6AQ6	7BT	
V4	Phase Inverter	6AQ6	6AQ6	7BT	
V5	Audio Output	35C5	35C5	7CV	
V6	Audio Output	35C5	35C5	7CV	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	RCA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■80	150	73013	AFH3-13		UP84215		FP216	TVL-2418	
B	▲30	150						TC42	TVA-1418	
C	10	150								
C2	.047	400	73553	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C3	56		77116				N150K-560			
C4	.0018	600	73581	P688-002	D6-182	PTE6D2	GP2-333-182	PT622	6TM-D2	
C5	56		93603	SI56	D6-560		GP1K-560	UC-5456	5GA-Q56	
C6	.0047	600	73920	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C7	.022	200	73562	P488-022	DF-203	PTE4S22		PT4122	4TM-S22	
C8	.0033	400	73795	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D3	
C9	.0056	400	73788		D6-562		GP2-333-562			
C10	120		76347	SI120	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C11	.022	400	73562	P488-022	DF-203	PTE4S22		PT4122	4TM-S22	
C12	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C13	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C14	.01	400	73561	P488-01	D5-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C15	.0022	600	73595	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D2	
C16	.047	400	75071	689ZGXY-01		PJ6S47		PT4147	4TM-S47	
C17	.047	400	73533	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C18	.047	400	73533	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	2 Meg	½	76874	QI7-139X	AT-126	ABT-81	UT-450	Volume
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RCA PART No.	IRC PART No.	
R2	39KΩ	½	503339	BTS-39K	
R3	3.3Meg	½	504533	BTS-3.3Meg	
R4	270Ω	½	503127	BTS-270	
R5	120KΩ	½	503412	BTS-120K	
R6	390KΩ	½	503439	BTS-390K	
R7	1.5Meg	½	503515	BTS-1.5Meg	
R8	56KΩ	½	503356	BTS-56K	
R9	10Meg	½	504610	BTS-10Meg	
R10	220KΩ	½	504422	BTS-220K	
R11	220KΩ	½	504422	BTS-220K	
R12	10Meg	½	504610	BTS-10 Meg	

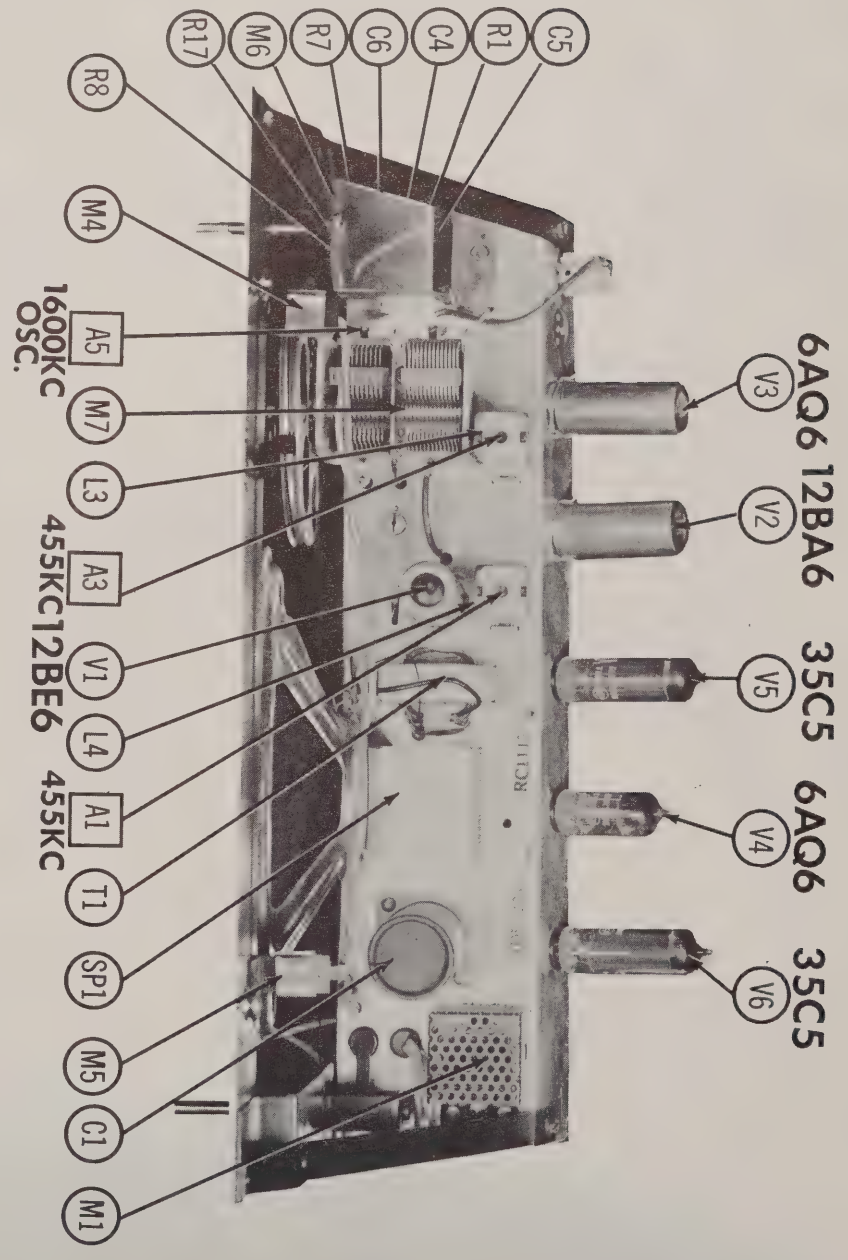
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RCA PART No.	IRC PART No.	
R13	470KΩ	½	503447	BTS-470K	
R14	12KΩ	½	503312	BTS-12K	
R15	82Ω	½	503082	BTS-82	
R16	470KΩ	½	504447	BTS-470K	
R17	330KΩ	½	503433	BTS-330K	
R18	47KΩ	½	503347	BTS-47K	
R19	1800Ω	½	503218	BTS-1800	
R20	1200Ω	1	513212	BTA-1200	
R21	66Ω	5	73038		
R22	*	*	73038		
R23	220KΩ	½	504422	BTS-220K	

* Special resistor with negative temperature coefficient, 95Ω @ 38°C & 13.5Ω @ 104° C.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	3.9KΩ	3.3Ω	285ΩCT	.46Ω	51X157	A-3850		RO-303 ①	S-51X	① Drill one new mtg. hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	RCA PART No.	VIKING PART No.	QUAM PART No.	
SP1	5"X7"	PM	3.3Ω	12A510	57J9	57A1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	RCA PART No.	MERIT PART No.	
L1	Loop Ant.	1.5Ω		76876		
L2	Osc.Coil	.2Ω	5.8Ω	76866	BC -381	
L3	Input IF	11Ω	11Ω	74918	BC-352	
L4	Output	14Ω	14Ω	73037	BC-353 *	

* Add a 155MMF capacitor from terminal 2 to ground.

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT	RCA PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	
M1	.085	76871		5M1	1101		

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	RCA PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2	75475	9-D*	Q & Q-33			96-0	0-1 or S-1 and 0-3 or S-3	* Complete Tone Arm & Cartridge Assembly

ASTATIC, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	RCA PART No.	WALCO PART No.	JENSEN PART No.	
M3	75497 & 75496	W-44A or W-44S and W44MGS or W-44MGA	M-74 or M-75 and M-74LP or M-75LP	

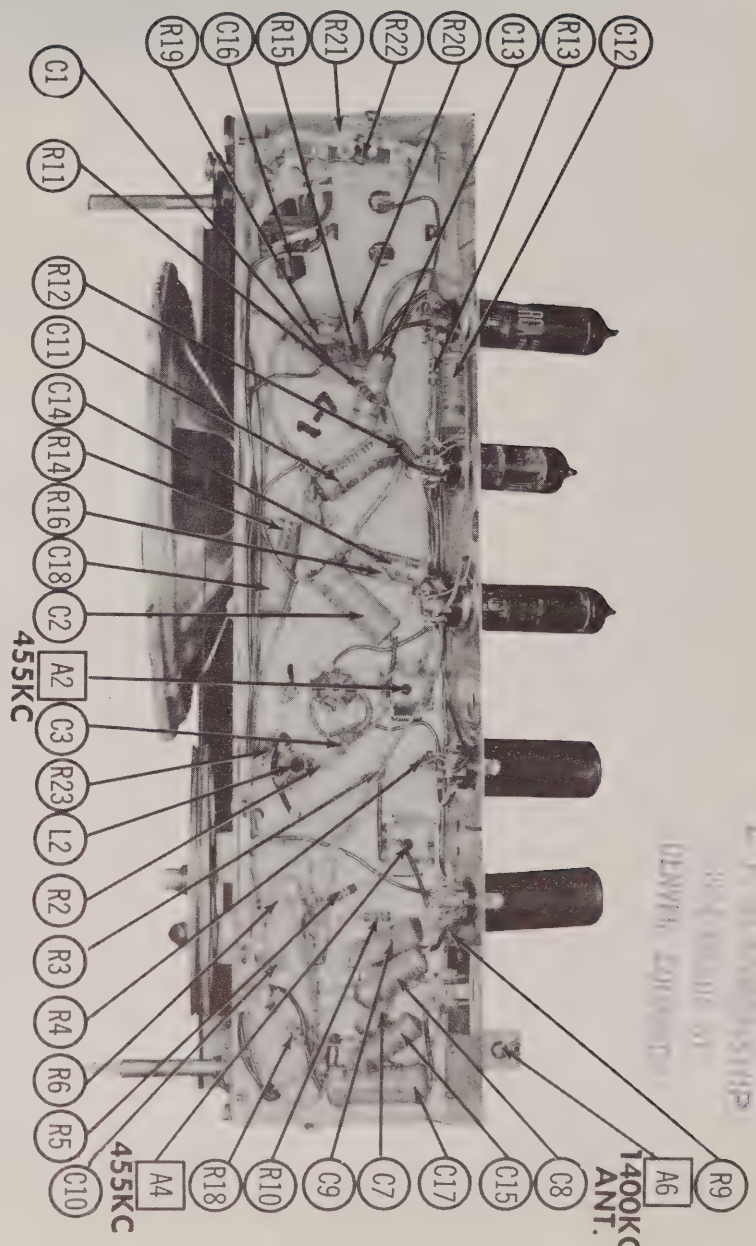
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					RCA PART No.		
M4	Bayonet	6-8	.2	White	11765		Type No. #51
M5	Bayonet	6-8	.2	White	11765		Type No. #51

MISCELLANEOUS

ITEM No.	PART NAME	RCA PART No.	NOTES
M6	Switch	76873	Function Selector
M7	2 Gang Var. Cap.	76867	(9-440MMF, 17-180MMF)
A6	Trimmer	76872	Ant. Adj. (2.5-30MMF
	Dial Scale	76877	
	Pointer	76868	
	Knob	76882	Function Switch
	Knob	76881	Tuning (Inner)
	Knob	76883	Tuning (Outer)
	Knob	76880	Volume

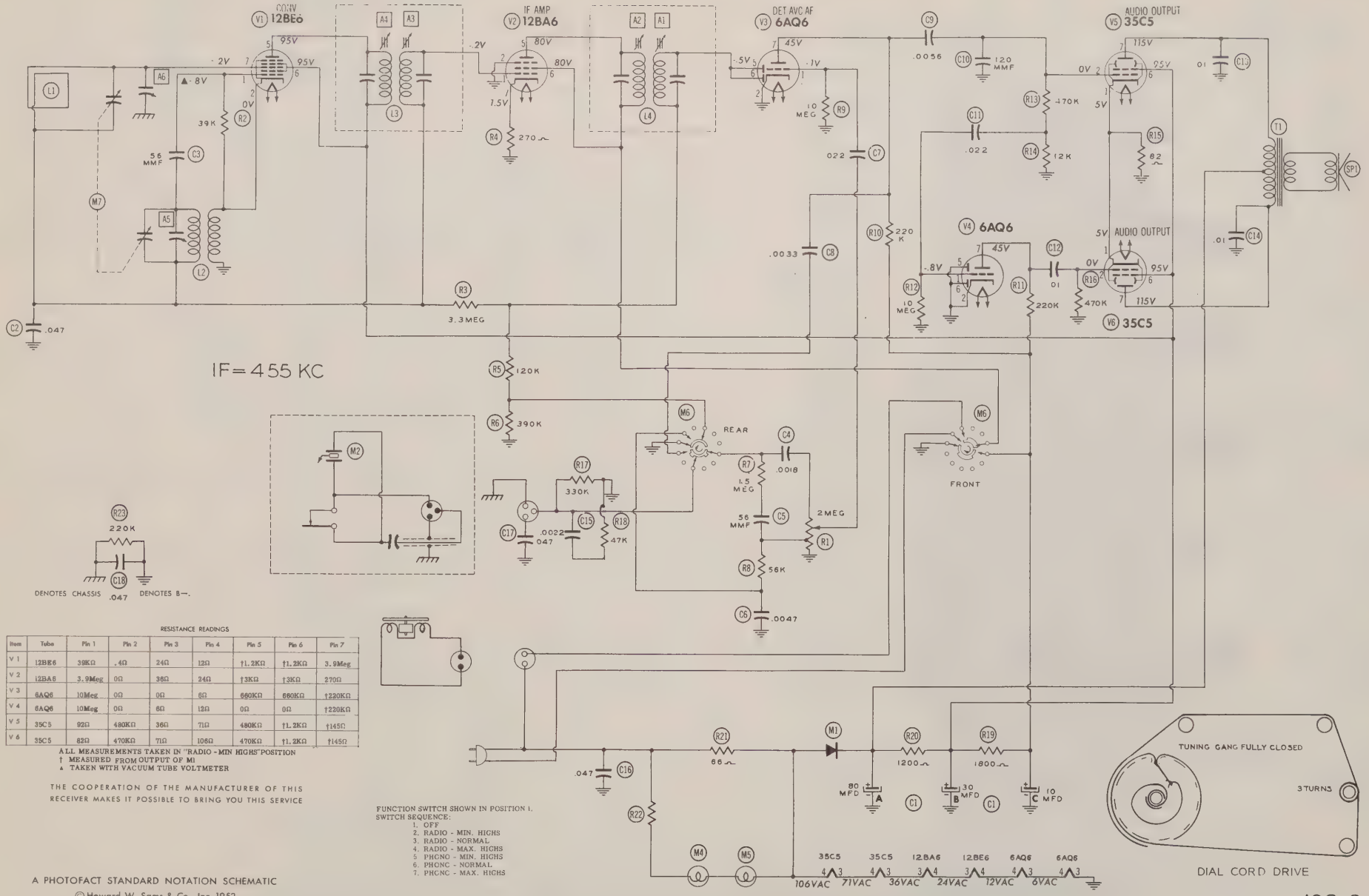
CHASSIS—BOTTOM VIEW



SET 182 FOLDER 8

RCA MODEL 2US7 (Ch-1017A)

RCA MODEL 2US7 (Ch-1017A)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	39KΩ	.4Ω	24Ω	12Ω	†1.2KΩ	†1.2KΩ	3.9Meg
V 2	12BA6	3.9Meg	0Ω	36Ω	24Ω	†3KΩ	†3KΩ	270Ω
V 3	6AQ6	10Meg	0Ω	0Ω	6Ω	660KΩ	660KΩ	†220KΩ
V 4	6AQ6	10Meg	0Ω	6Ω	12Ω	0Ω	0Ω	†220KΩ
V 5	35C5	92Ω	480KΩ	36Ω	71Ω	480KΩ	†1.2KΩ	†145Ω
V 6	35C5	82Ω	470KΩ	71Ω	106Ω	470KΩ	†1.2KΩ	†145Ω

ALL MEASUREMENTS TAKEN IN "RADIO - MIN HIGHS" POSITION
† MEASURED FROM OUTPUT OF M1
▲ TAKEN WITH VACUUM TUBE VOLTMETER

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

FUNCTION SWITCH SHOWN IN POSITION 1.
SWITCH SEQUENCE:
1. OFF
2. RADIO - MIN. HIGHS
3. RADIO - NORMAL
4. RADIO - MAX. HIGHS
5. PHONO - MIN. HIGHS
6. PHONO - NORMAL
7. PHONO - MAX. HIGHS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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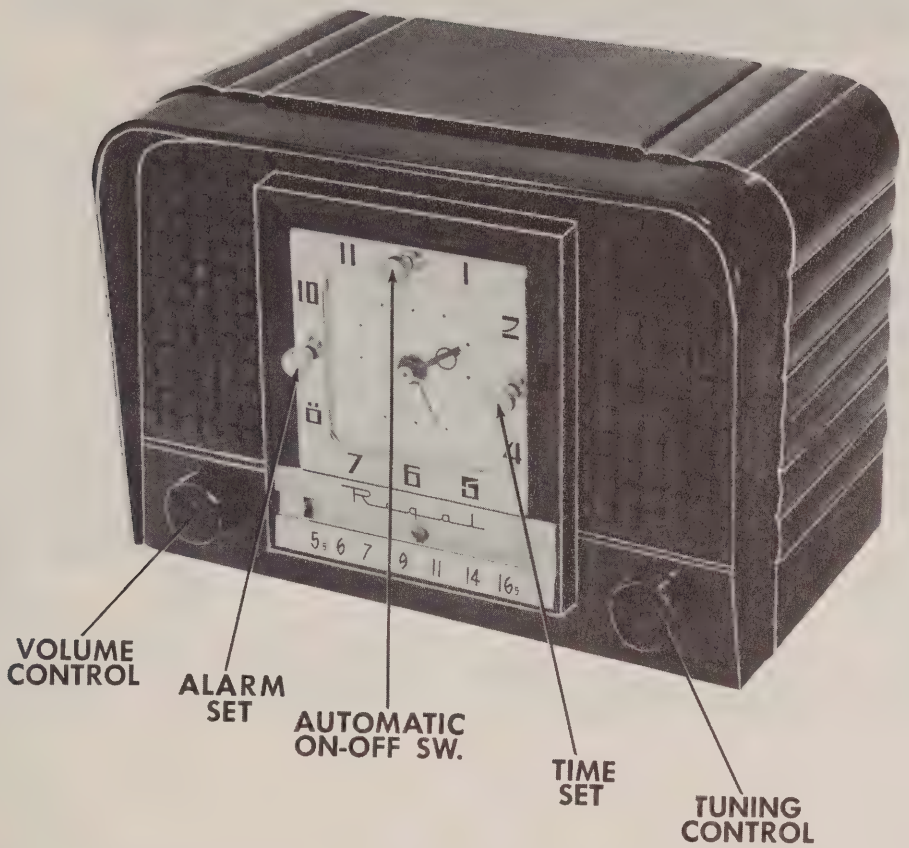
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DENVER, COLORADO



REGAL
MODEL C-527

TRADE NAME	Regal Model C-527
MANUFACTURER	Regal Electronics Corp., 605 W. 130th St., New York, N.Y.
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AV-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540 - 1680 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn tuning gang fully open and set pointer 3/8 inch from right hand end of pointer plate. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to stator lug of front section of tuning gang. Low side to B-.	455 KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1680 KC	"	"	A5	"
3.		Loop	1400 KC	Tune 1400 KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	600 KC	Tune to 600 KC signal	"		Check for tracking at 600 KC. If necessary, bend outer plates of front section of tuning gang slightly for optimum tracking.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

REGAL
MODEL C-527

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		REGAL PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	REGAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150		PRS150/50-50		EDL5515		2N521	TVA-2453	Red
B	50	150								Green
C2	100						N220L-101			
C3	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C4	250			SI250	D6-251	5W5T25	GP2K-251	UC-5325	5GA-T25	
C5	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C6	250			SI250	D6-251	5W5T25	GP2K-251	UC-5325	5GA-T25	
C7	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C8	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C9	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C10	.2	400		P488-22		PTE4P22			4TM-P22	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	REGAL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	20-122	Q11-133	AG-58-S	AB-59	U-50	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A

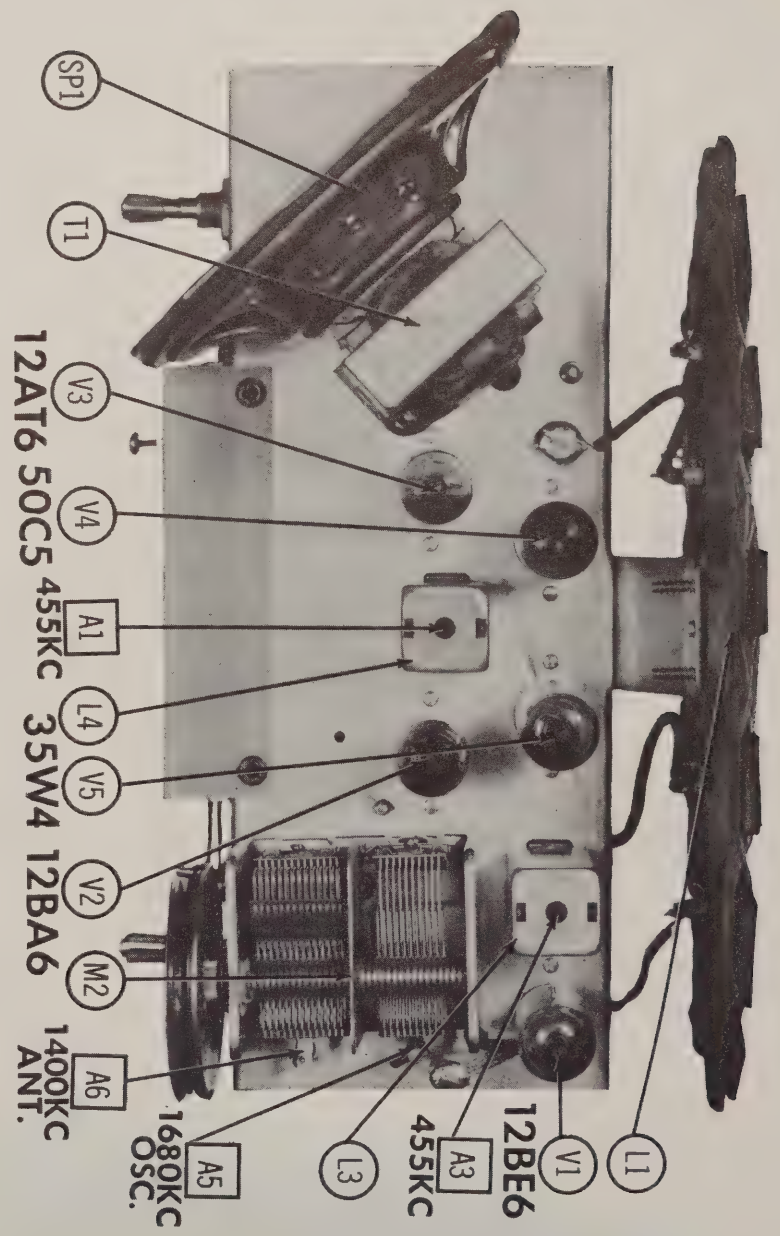
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	REGAL PART No.	IRC PART No.	
R2	22KΩ	½		BTS-22K	
R3	220Ω	½		BTS-220	
R4	2.2Meg	½		BTS-2.2Meg	
R5	6.8Meg	½		BTS-6.8Meg	
R6	220KΩ	½		BTS-220K	
R7	470KΩ	½		BTS-470K	
R8	150Ω	½		BTS-150	
R9	1000Ω	2		BTB-1000	
R10	25Ω	½			
R11	220KΩ	½		BTS-220K	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		REGAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.6KΩ	3.4Ω	185Ω	.54Ω	Part of spkr.	A-3330	A-2928	RO-302	S-1X	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	REGAL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.4Ω	110-117	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

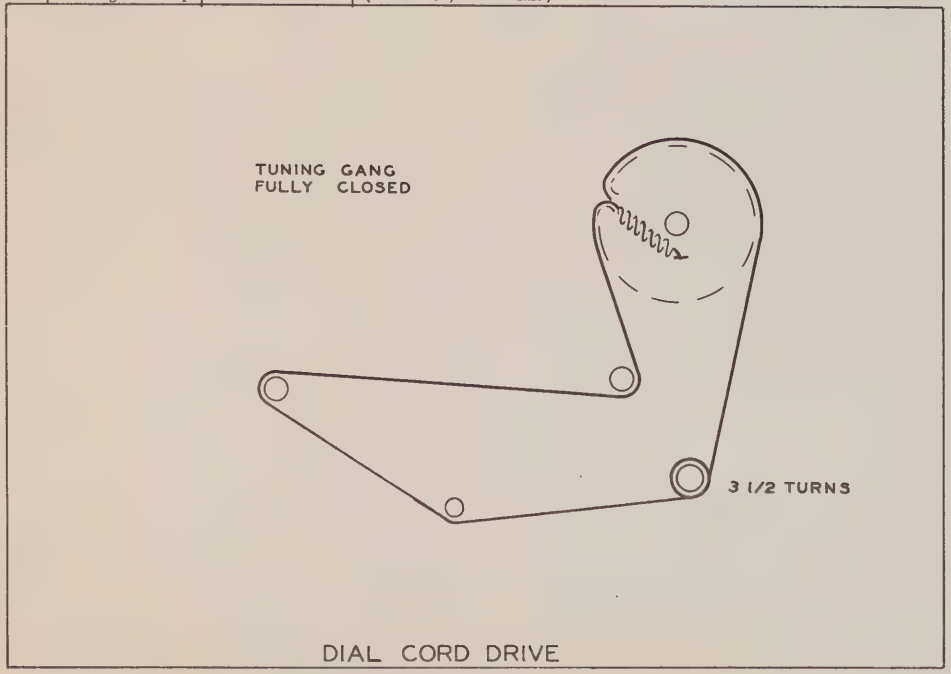
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	REGAL PART No.	MERIT PART No.	
L1	Loop Ant.	.1Ω	2Ω	30-229		
L2	Osc. Coil	6.2Ω		30-127		Tapped @ 5.5Ω
L3	Input IF	15Ω	15Ω	30-154	BC-352	
L4	Output IF	15Ω	15Ω	30-154	BC-353	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					REGAL PART No.		
M1	Bayonet	6-8	.15	Brown			Type #47

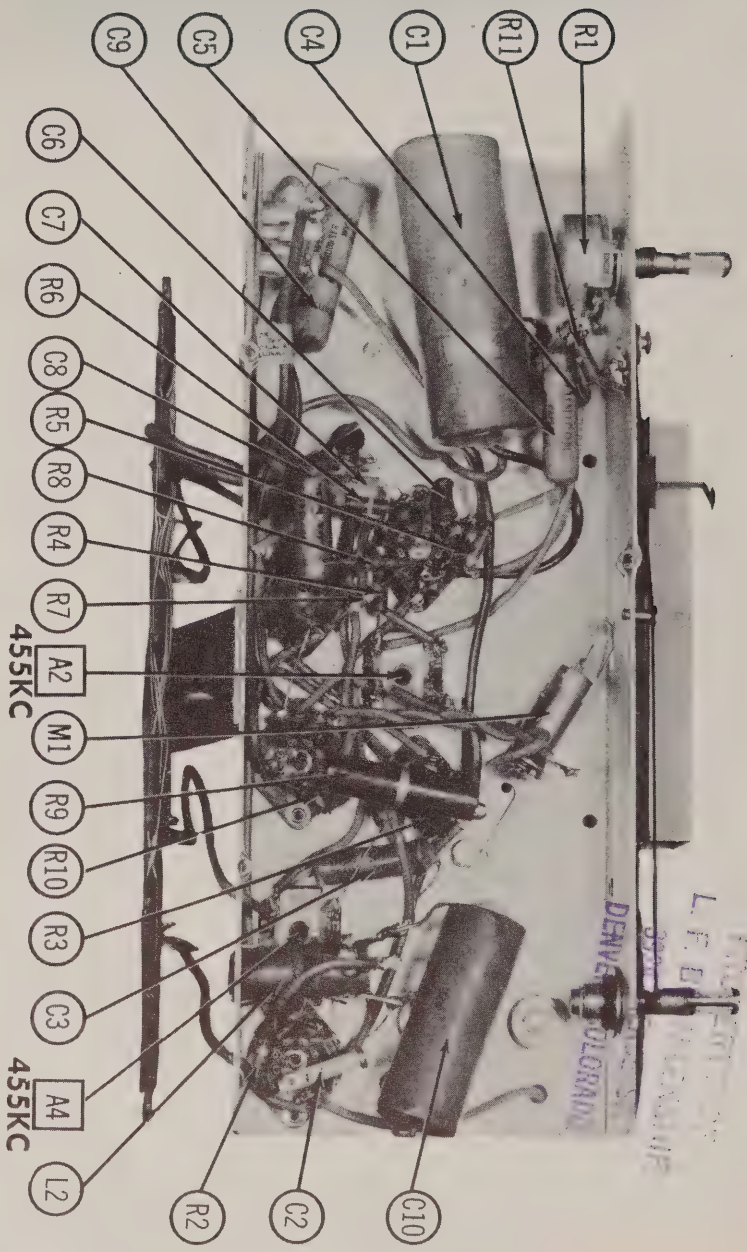
MISCELLANEOUS

ITEM No.	PART NAME	REGAL PART No.	NOTES
M2	2 Gang Var. Cap.	40-132	(6-447MMF, 24-215MMF)

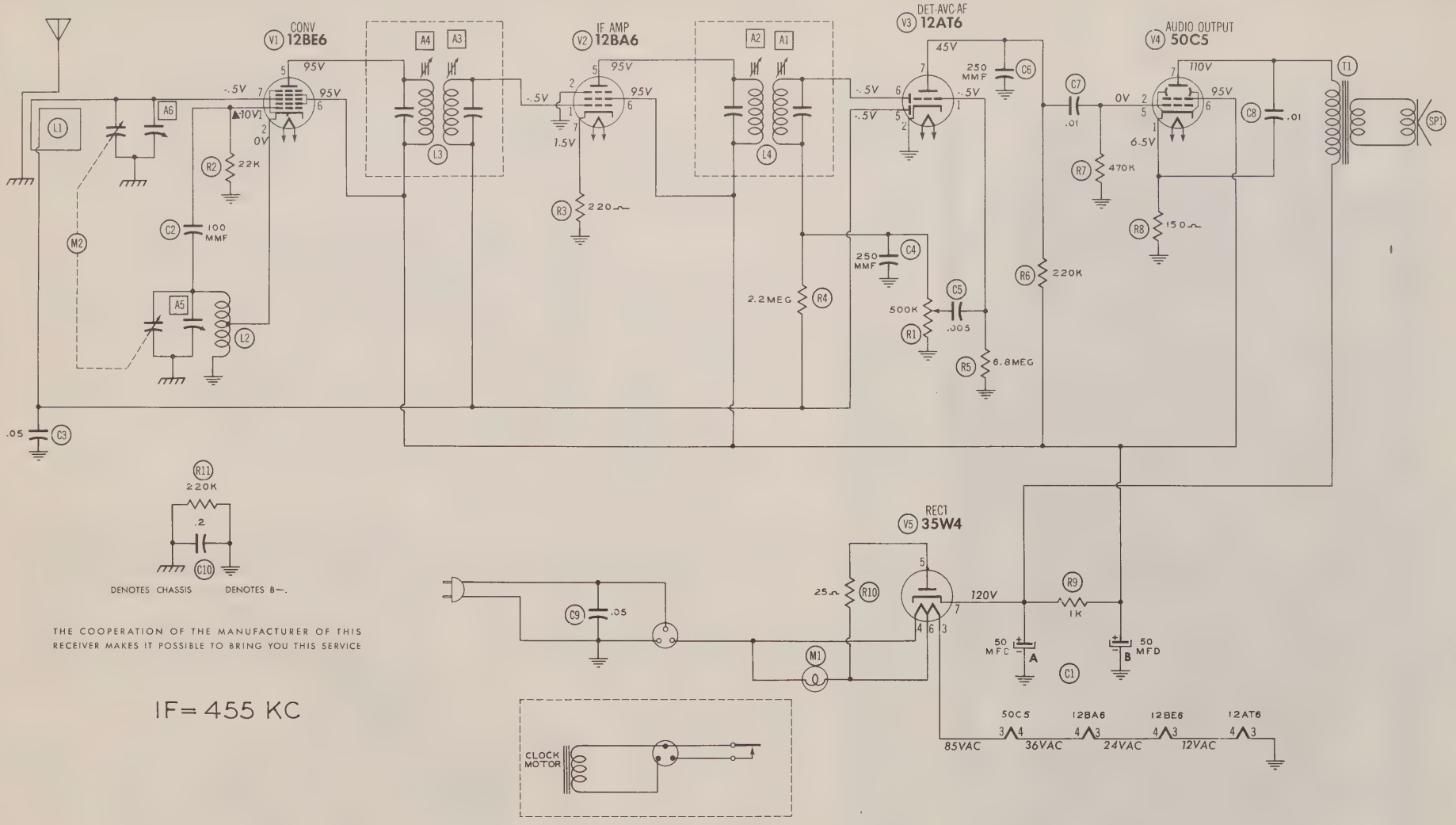


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



REGAL MODEL C-527



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

IF= 455 KC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.7Ω	12Ω	24Ω	†1KΩ	†1KΩ	2.7Meg
V 2	12BA6	2.7Meg	0Ω	24Ω	36Ω	†1KΩ	†1KΩ	220Ω
V 3	12AT6	6.8Meg	0Ω	0Ω	12Ω	2.7Meg	500KΩ	†220KΩ
V 4	50C5	150Ω	470KΩ	86Ω	36Ω	470KΩ	†1KΩ	†185Ω
V 5	35W4	†0Ω	INF	86Ω	121Ω	128Ω	103Ω	40KΩ

† MEASURED FROM PIN 7 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

REGAL
MODEL 1877

REGAL
MODEL 1877

TRADE NAME	Regal Model 1877
MANUFACTURER	Regal Electronics Corp., 605 W. 130th. St., New York, N.Y.
TYPE SET	Three Power Portable Superheterodyne Receiver
TUBES (FOUR)	Types 1R5 Conv., 1T4 IF Amp., 1S5 Det.-AVC-AF Amp., 3S4 Audio Output.
POWER SUPPLY	110-120 Volts AC/DC or 4.5Volts "A" Supply & 67.5 Volts "B" Supply
RATING	.15 Amp. @ 117 Volts AC or 100 MA @ 4.5 Volts DC & 11MA@ 67.5Volts DC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn tuning gang fully open and set pointer 11/16 in. from right hand edge of metal dial plate.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (grid) of 1R5 (V1). Low side to chassis.	455KC (400~Mod)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If AC isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1650KC	"	"	A5	"
3.		Loop	1500KC	Tune to 1500KC signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	600KC	Tune to 600KC	"		Check tracking at 600KC. If necessary bend outer plates of antenna section of tuning gang slightly for optimum tracking.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: REGAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1T4	1T4	6AR	
V3	Det.-AVC-AF Amp.	1S5	1S5	6AU	
V4	Audio Output	3S4	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: REGAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150		PRS150/50-30		EDL5315-X20		3N529	TVA-3433	Note 2
B	30	150		PRS25/250						Note 2
C	300	25								Note 2
C2	.05	200	50-109	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	50	500	55-101	1468-00005	D6-500	5W5Q5	GP1K-500		1FM-45	
C4	.05	200	50-109	P288-05	DF-503	PJ2S5		PT415	2TM-S5	Note 1
C5	.05	200	50-109	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C6	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	Note 3
C7	250		50-103	SI250	D6-251	5W5T25	GP2K-251	UC-5325	5GA-T25	
C8	.0022	600	50-110	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C9A	100			SI100		TM5T1		UC-531		Note 4
B	5000			BPD-005	♦PC-91	TM5D5	♦1407-03	DC-525	♦103C3	Note 3
C	5000			BPD-005		TM5D5		DC-525		Note 5
C10	.002	600	50-110	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C11	150		60-112	SI150	D6-151	TM5T15	GP2K-151	UC-5315	5GA-T15	Note 1
C12	.05	400	50-114	P488-05	DF-104	PTE4S5		PT415	4TM-S5	

Note 1. Not used in all models.
Note 2. C1C is 250MFD in some models. (C1 part #60-106)
Note 3. Some models use .05MFD in this application (Part #50-109)
Note 4. Some models use 50MMF in this application (part #50-101)
Note 5. Some models use .005MFD in this application (Part #50-123)
♦ Items C9A, C9B, C9C, R6A, R6B, R6C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: REGAL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	20-109	Q13-137	AG-63-Z	BSK-70-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWB-2	Not Req.	US-27	Attach to R1A

RESISTORS

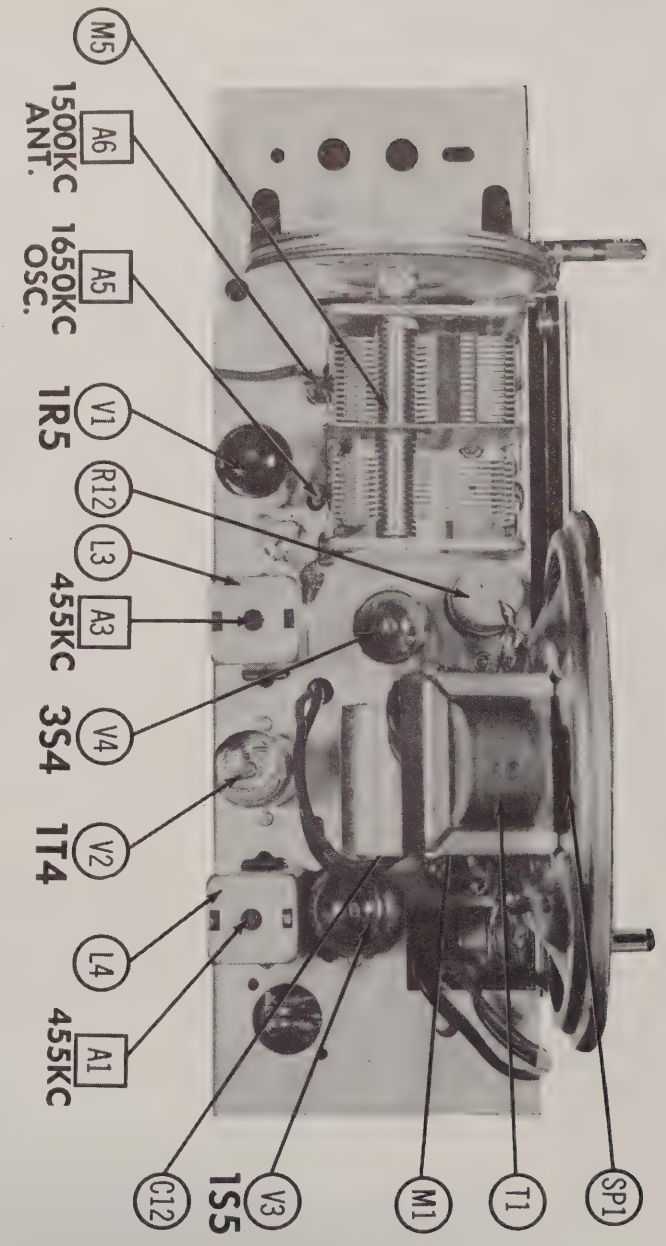
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: REGAL PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	100KΩ	½		BTS-100K	
R3	3300Ω	½		BTS-3300	
R4	2.2Meg	½		BTS-2.2Meg	
R5	6.8Meg	½		BTS-6.8Meg	Note
R6A	4.7Meg	½		BTS-4.7Meg	
B	1 Meg	½	♦	BTS-1Meg	
C	2.2Meg	½		BTS-2.2Meg	
R7	470Ω	½		BTS-470	
R8	680Ω	½		BTS-680	
R9	24Ω	½			
R10	1000Ω	½		BTS-1000	
R11	1000Ω	1½		BTS-1000	
R12	2500Ω	10		1 3/4A-2500	
R13	2200Ω	2		BTB-2200	
R14	51Ω	1			

♦ Items R6A, R6B, C9A, C9B, C9C are combined in one unit.
Note: Some models use 10Meg resistor in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: REGAL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	5.4KΩ	3.3Ω	335Ω	.41Ω	Part of Spkr.	A-3328	A-2930	RO-8	S-3X	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	REGAL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.3Ω	110-112	ST-740 Mod. P5-X	5J4	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	REGAL PART No.	MERIT PART No.	
L1	Loop Ant.	2.5Ω		30-192		
L2	Osc. Coil	1.7Ω	5.6Ω	30-193		
L3	Input IF	25Ω	25Ω	30-177	BC-352	
L4	Output IF	25Ω	25Ω	30-177	BC-353	

SELENIUM RECTIFIER

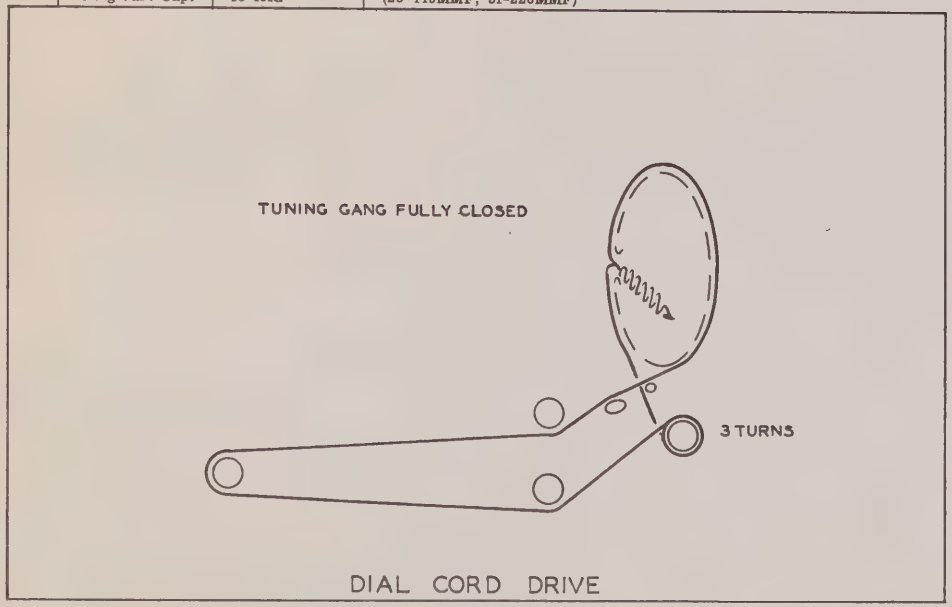
ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT	REGAL PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	
M1	.070	175-1	NC5	5M1	1101	6S100	

BATTERIES

ITEM No.	VOLTAGE	REGAL PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	4.5V		746			F3			
M3	67.5V			467			XX45		

MISCELLANEOUS

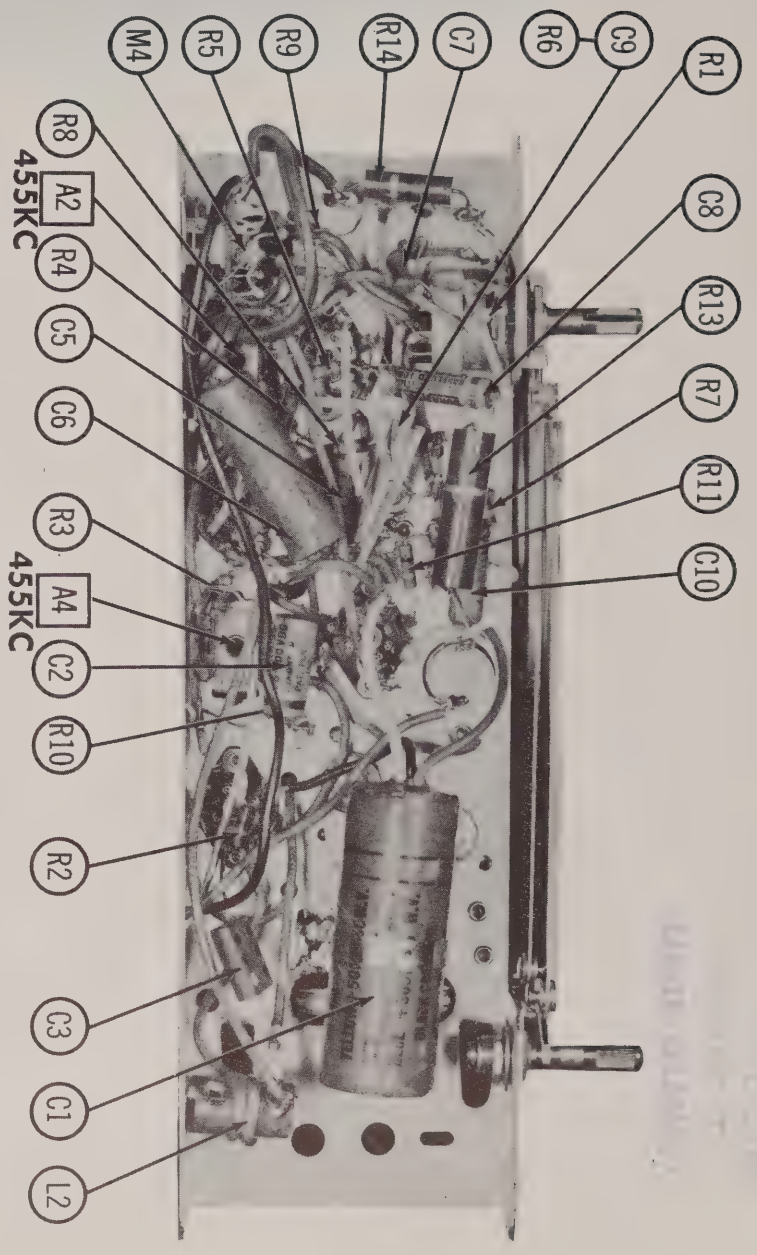
ITEM No.	PART NAME	REGAL PART No.	NOTES
M4	Switch	95-116	Power Change over
M5	2 Gang Var. Cap.	40-101G	(20-445MMF, 31-220MMF)



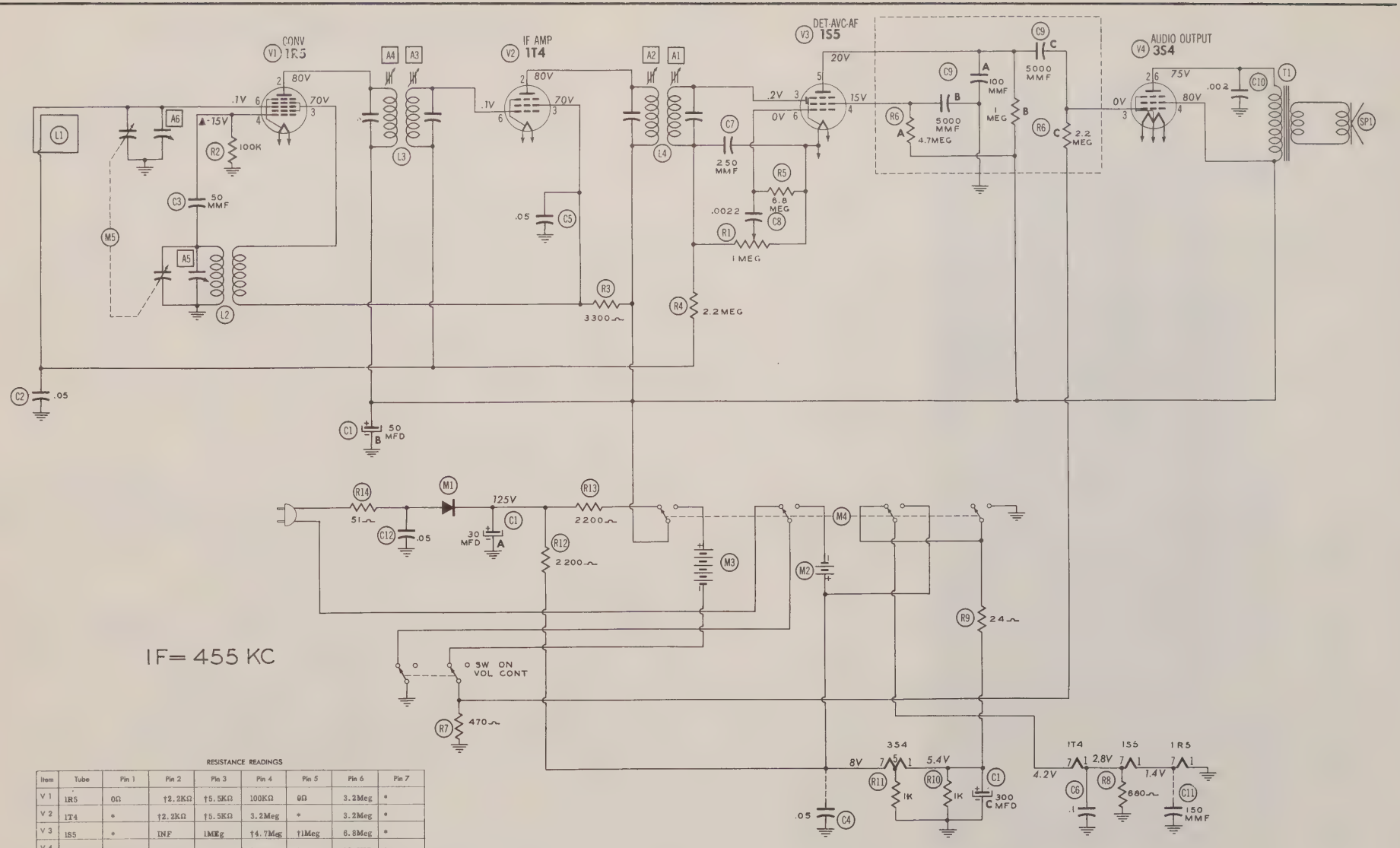
SET 182 FOLDER 10

REGAL MODEL 1877

CHASSIS—BOTTOM VIEW



REGAL MODEL 1877



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	0Ω	†2.2KΩ	†5.5KΩ	100KΩ	0Ω	3.2Meg	*
V 2	1T4	*	†2.2KΩ	†5.5KΩ	3.2Meg	*	3.2Meg	*
V 3	1S5	*	INF	1MEg	†4.7Meg	†1Meg	6.8Meg	*
V 4	3S4	*	†2.5KΩ	2.2Meg	†2.2KΩ	*	†2.5KΩ	*

ALL MEASUREMENTS TAKEN WITH POWER CHANGEOVER SWITCH IN "AC" POSITION
† MEASURED FROM OUTPUT OF M1
▲ TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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182-10

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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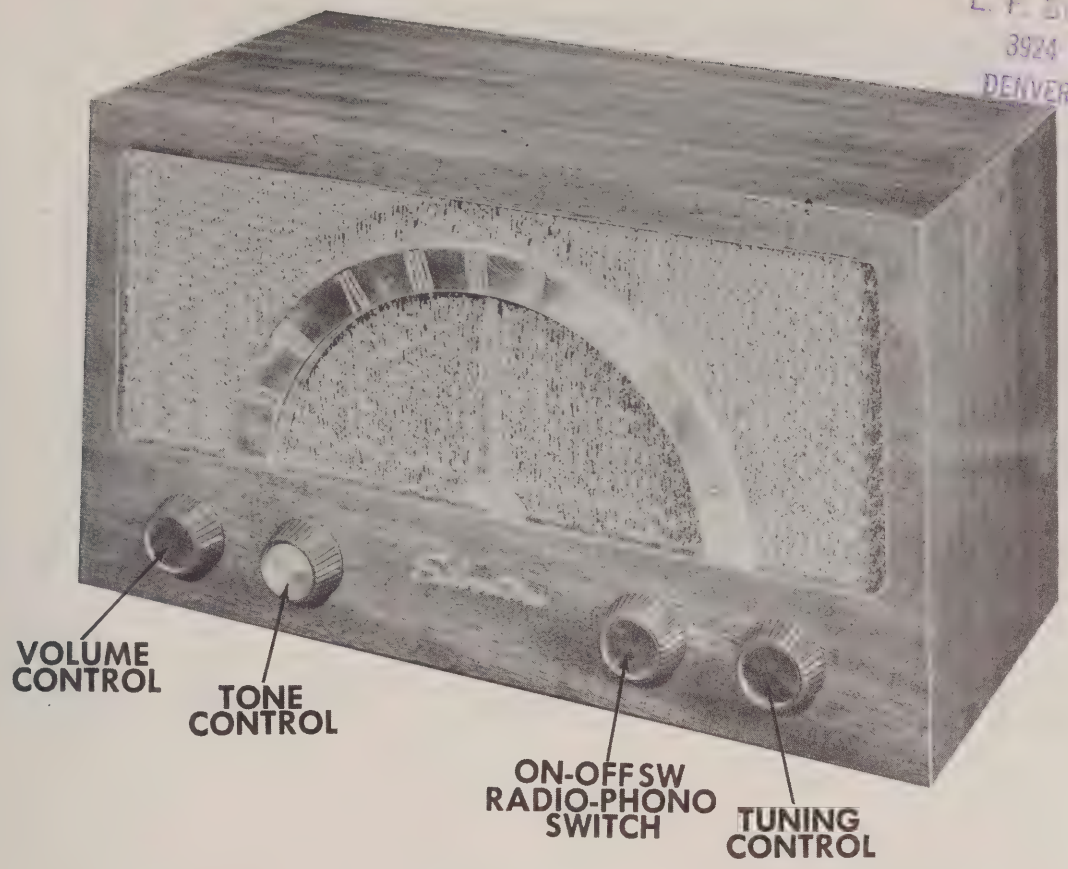
DENVER, COLORADO

SILVERTONE
MODELS 1017, 1018 (Ch. 528.210)



SILVERTONE
MODELS 1017, 1018 (Ch. 528.210)

TRADE NAME	Silvertone Model 1017, 1018 (Ch. 528.210)
SUPPLIER	Sears Roebuck & Co., 925 So. Homan Ave., Chicago, Ill.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver With Phono Provisions
TUBES (Five)	Types 12BA6 RF Amp., 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output.
POWER SUPPLY	110-120 Volts AC/DC RATING .30 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1610 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V2) Low side to B-.	455KC (400~Mod.)	Tuning gang fully open	Across voice coil	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1610 KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400 KC signal	"	A6, A7	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Silvertone PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	12BA6	12BA6	7BK	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	12BA6	12BA6	7BK	
V4	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V5	Audio Output	50C5	50C5	7CV	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: Silvertone PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	T18-304	PRS150/50-30		EDL5315		2N520	TVA-2450	Red
B	30	150								Yellow
C2	.05	200	T16-197	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	.05	600	T16-197	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C4	.05	600	T16-197	P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C5	47		T15-229	SI47	D6-470	5W5Q5	GP1K-470	UC-5447	5GA-Q47	
C6	.02	400	T16-150	P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C7A	220		T17-104	SI220	D6-221	5W5T25	GP2K-221	UC-5322	34C4	
B	.002			BPD-002	DD-202	TM5D2	801-002	DC-522		
C	220			SI220	D6-221	5W5T25	GP2K-221	UC-5322		
D	.005			BPD-005	DD-502	TM5D5	811-005	DC-525		
C8	.005	600	T16-190	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C9	.005	600	T16-190	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C10	.05	400	T16-189	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C11	.05	400	T16-189	P488-05	DF-503	PTE4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	T24-199	Q13-137	AG-63-Z	B-70	U-53	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
R2A	500KΩ	½	T26-129	Q11-133	AG-58-S	B-59	U-50	Tone
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	NOTES
R3	220Ω	½	T60-753	BTS-220	
R4	4700Ω	½	T60-759	BTS-4700	
R5	100KΩ	½	T60-727	BTS-100K	
R6	22KΩ	½	T60-659	BTS-22K	
R7	2.2Meg	½	T60-726	BTS-2.2Meg	
R8	47KΩ	½	T60-730	BTS-47K	
R9	270KΩ	½	T60-747	BTS-270K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	NOTES
R10	10Meg	½	T60-728	BTS-10Meg	
R11	470KΩ	½	T60-731	BTS-470K	
R12	470KΩ	½	T60-731	BTS-470K	
R13	180Ω	½	T60-774	BTS-180	
R14	820Ω	1	T60-874	BTA-820	
R15	15Ω	3	T60-738		
R16	110Ω	4	T60-876		

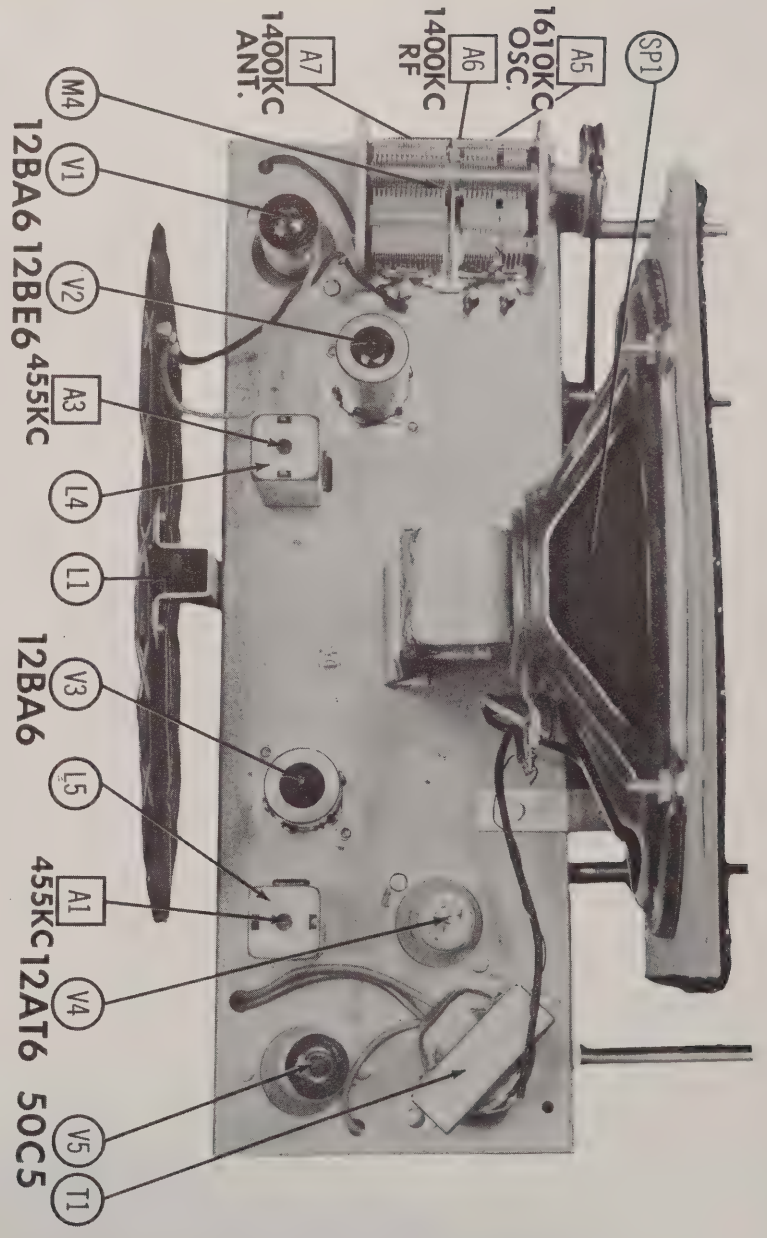
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA: Silvertone PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2.5KΩ	3.3Ω	227Ω tap @ 10Ω	.6Ω	B-80-280	A-3336		RO-3		

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA: Silvertone PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	5 x 7	PM	3.3Ω	79-394	57J9	57A1	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: Silvertone PART No.	REPLACEMENT DATA: MERIT PART No.	NOTES
L1	Loop Ant.	1.8Ω		T82-73		
L2	RF Coil	11Ω	12Ω	T10-535		Secondary tapped @ 4.3Ω
L3	Osc. Coil	1.6Ω	13Ω	T10-573		
L4	Input IF	15Ω	15Ω	T10-521	BC-352	
L5	Output IF	9.5Ω	9.5Ω	T10-529	BC-353	

SELENIUM RECTIFIER

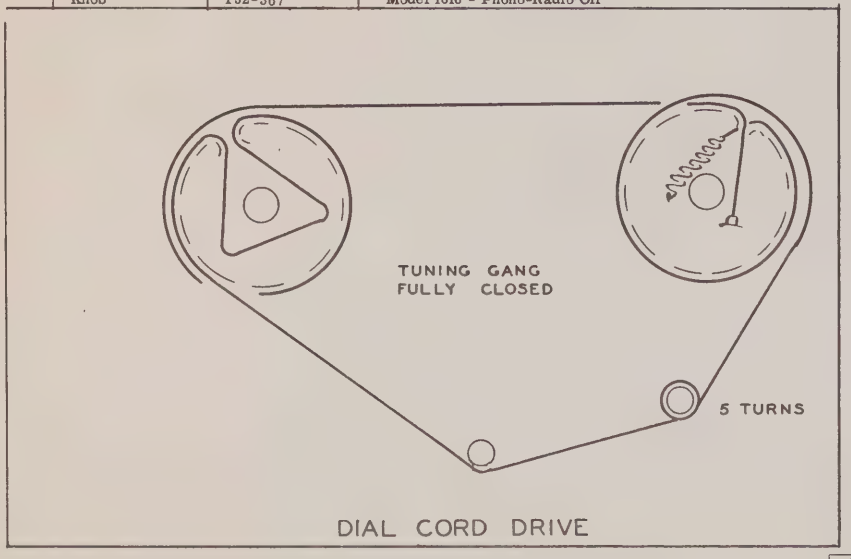
ITEM No.	RATING: CURRENT	REPLACEMENT DATA: Silvertone PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	NOTES
M1	.070		NB-5	5M4	1003	6S75	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: Silvertone PART No.		NOTES
M2	Screw	120	6		T89-9		

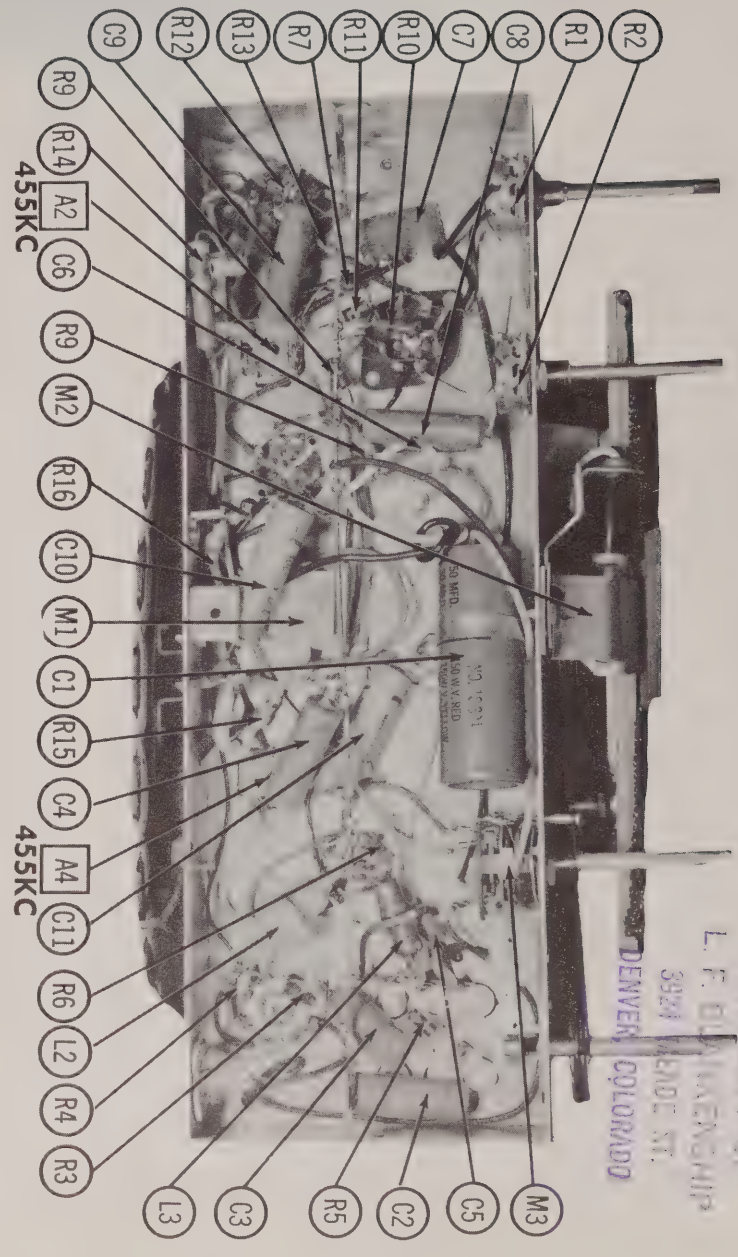
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Switch	T69-191	Radio-Phono-On/Off
M4	3 Gang Var. Cap.	T19-217	(30-598MMF, 4-313MMF, 3-187MMF)
	Dial Scale	T67-565	
	Pointer	T58-88	
	Cabinet	T42-509	Model 1017 (Mahogany)
	Cabinet	T42-521	Model 1018 (Blonde)
	Knob	T52-347	Model 1017 -Volume
	Knob	T52-364	Model 1018 - Volume
	Knob	T52-348	Model 1017 - Tone
	Knob	T52-365	Model 1018 - Tone
	Knob	T52-349	Model 1017 - Tuning
	Knob	T52-366	Model 1018 - Tuning
	Knob	T52-350	Model 1017 - Phono-Radio-Off
	Knob	T52-367	Model 1018 - Phono-Radio-Off



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



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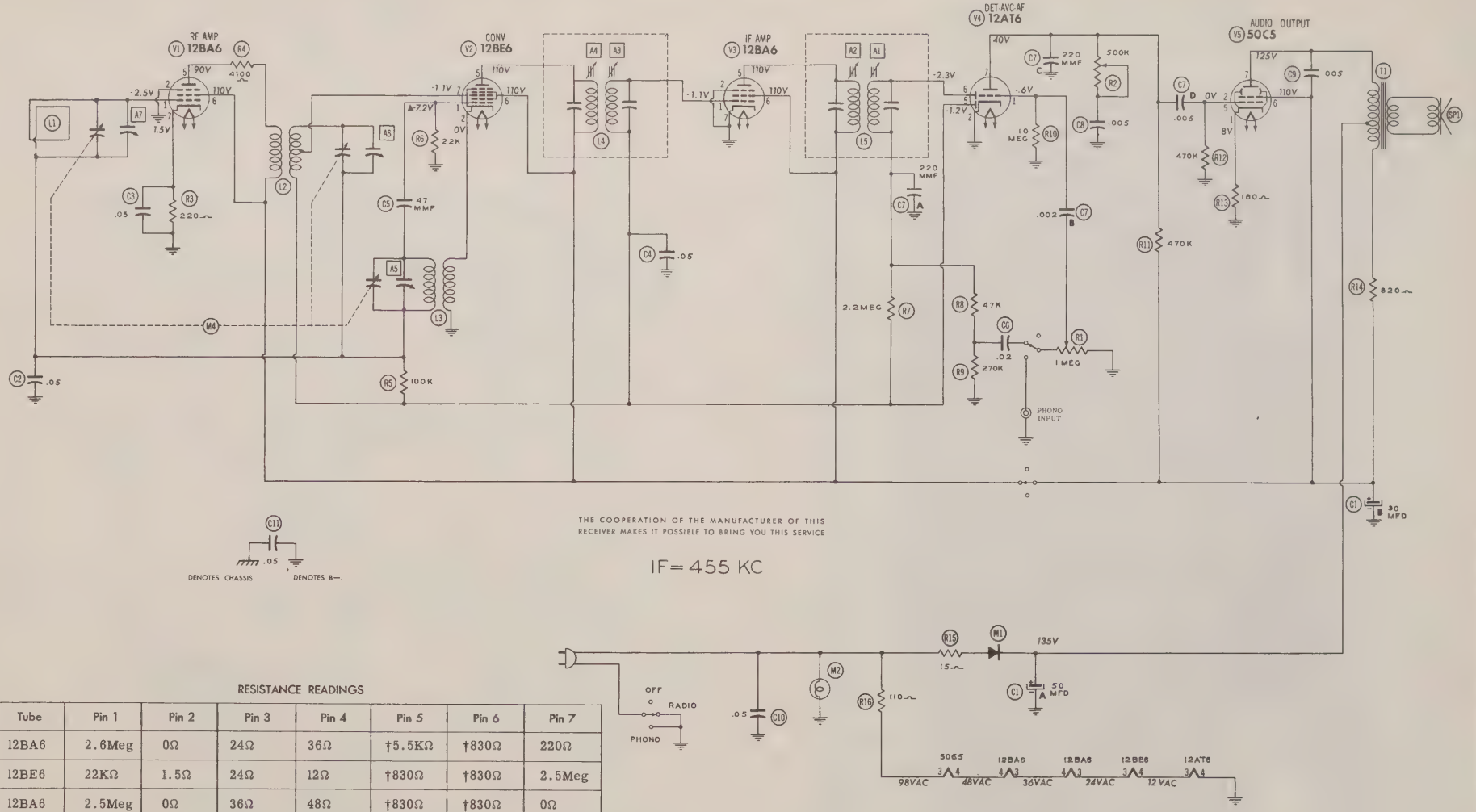
SILVERTONE
MODEL 1017, 1018 (Ch. 528.210)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BA6	2.6Meg	0Ω	24Ω	36Ω	†5.5KΩ	†830Ω	220Ω
V 2	12BE6	22KΩ	1.5Ω	24Ω	12Ω	†830Ω	†830Ω	2.5Meg
V 3	12BA6	2.5Meg	0Ω	36Ω	48Ω	†830Ω	†830Ω	0Ω
V 4	12AT6	10Meg	0Ω	12Ω	0Ω	2.5Meg	315KΩ	†470KΩ
V 5	50C5	180Ω	470KΩ	98Ω	48Ω	470KΩ	†830Ω	†217Ω

ALL MEASUREMENTS TAKEN IN RADIO POSITION
† MEASURED FROM OUTPUT OF M1
▲ TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SONORA
MODEL 352

PROPERTY OF

IMPORTANT FILING NOTICE

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MODEL 352

SONORA
MODEL 352

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SONORA MODEL 352

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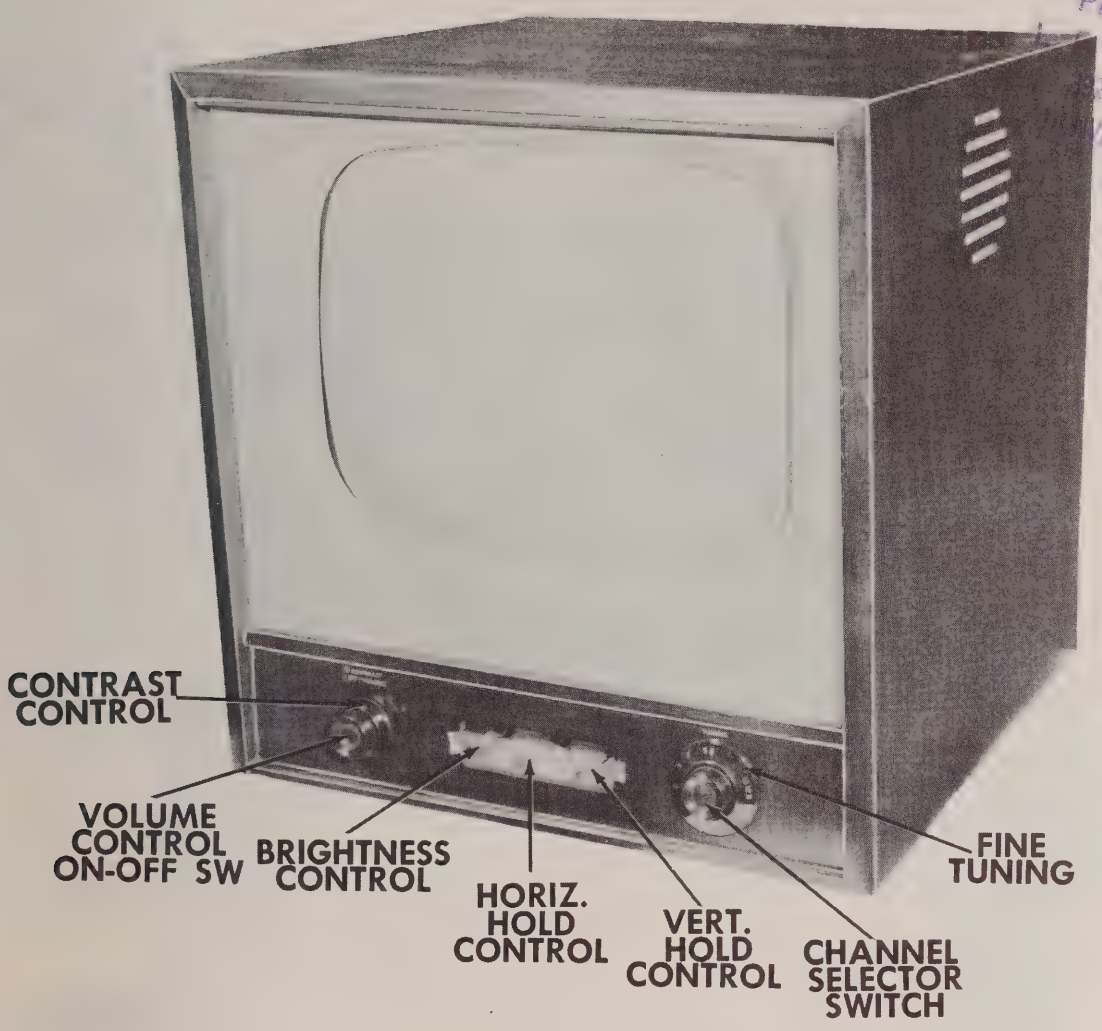

SONORA MODEL 352

TRADE NAME	Sonora Model 352
MANUFACTURER	Sonora Radio & Tel. Corp., 325 N. Hoyne Ave., Chicago, Ill.
TYPE SET	Television Receiver
TUBES	Nineteen
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	1.8 Amp. @ 117 Volts AC
TUNING RANGE—	CHANNELS 2 thru 13 (Continuous Tuning)

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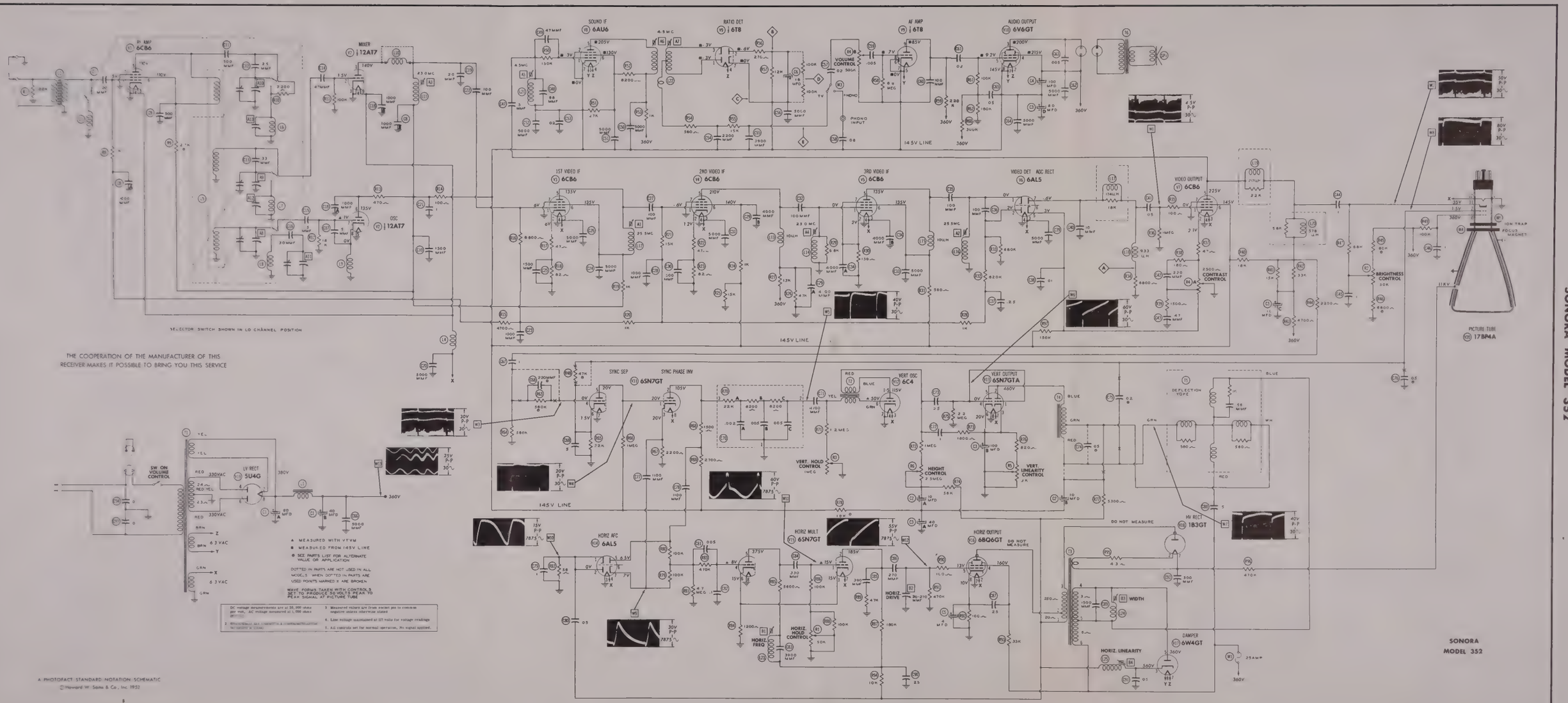
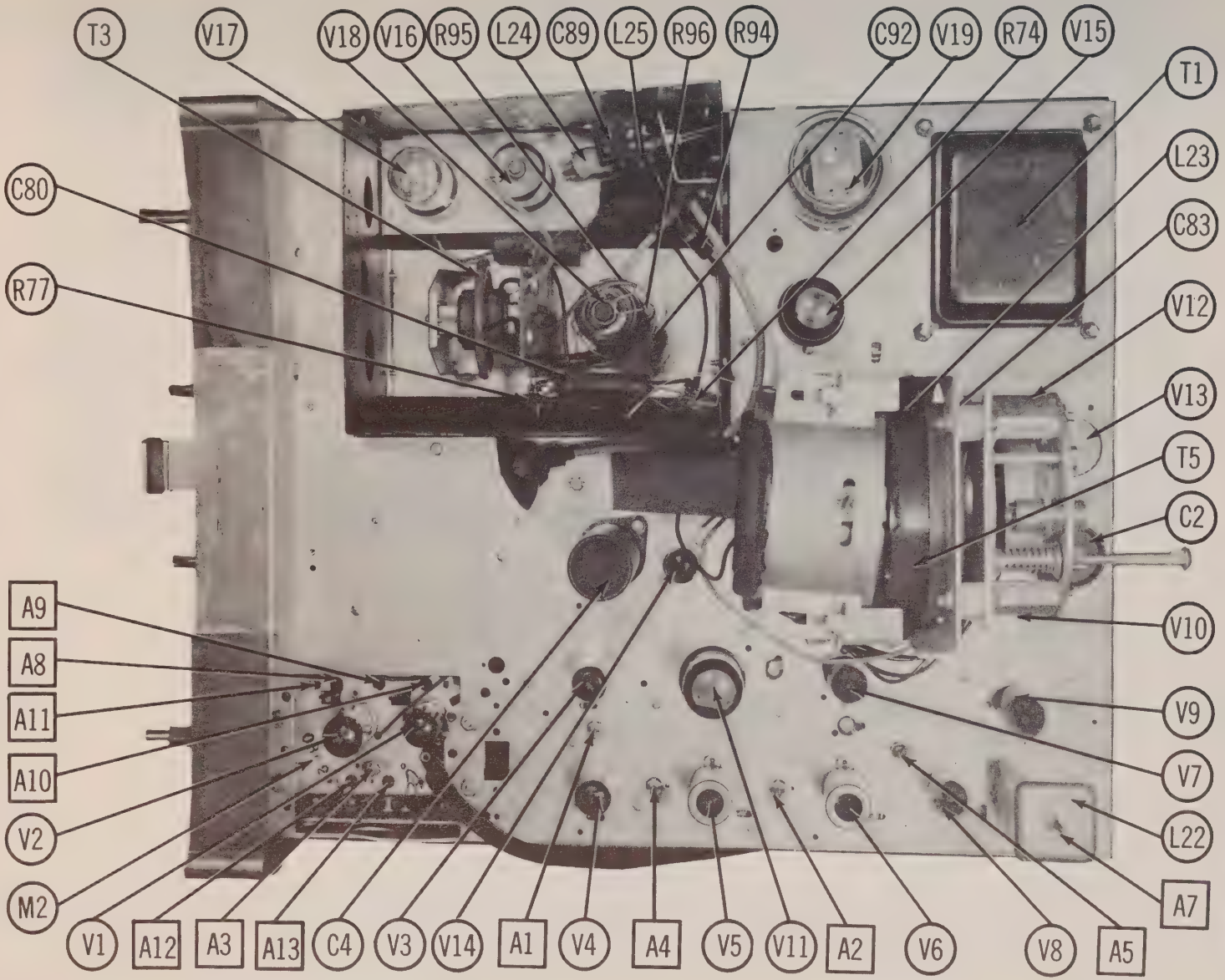
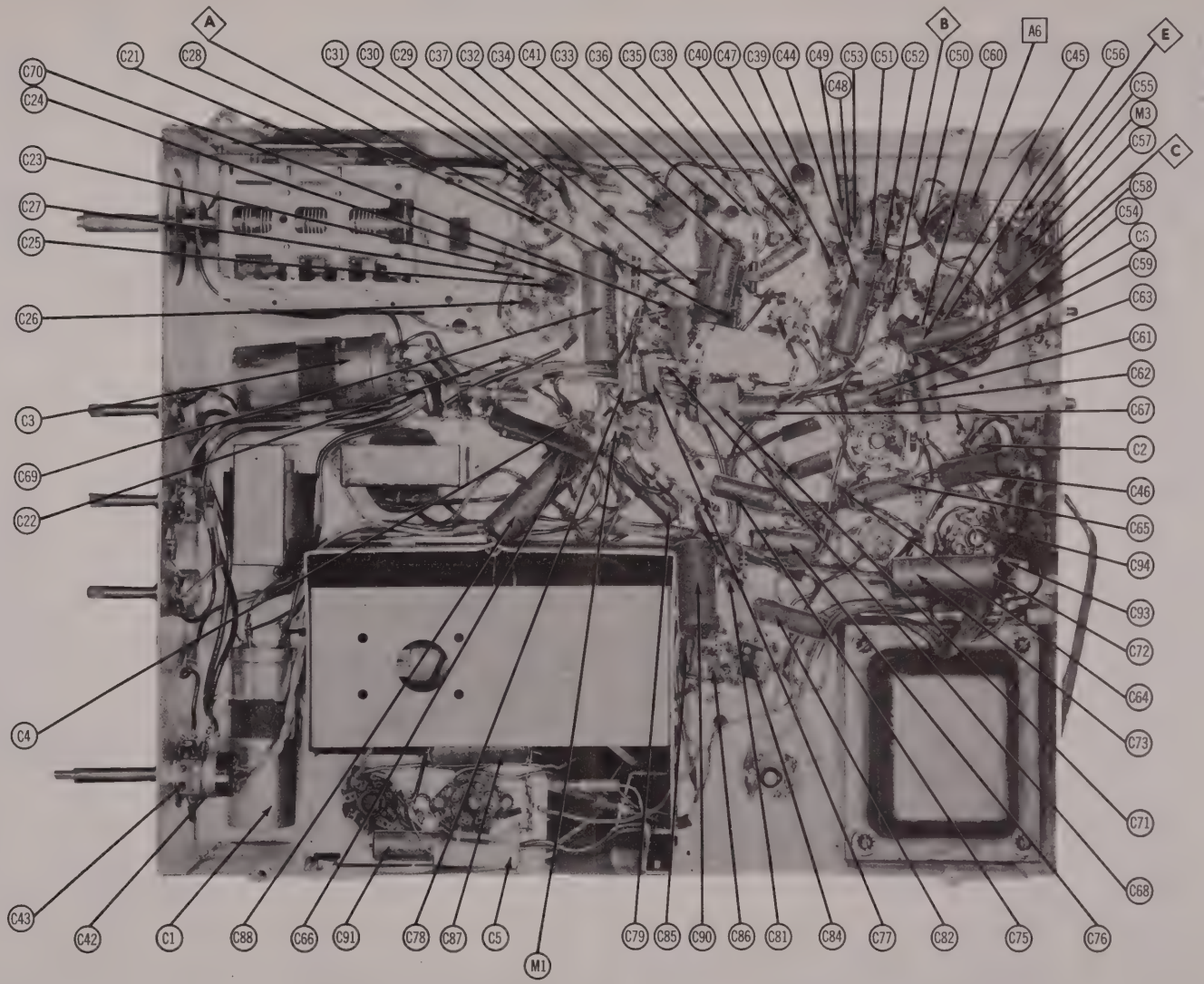

SONORA MODEL 352
SELECTOR SWITCH SHOWN IN LO CHANNEL POSITION
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A MEASURED WITH VTVM
B MEASURED FROM 145V LINE
C SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
WAVE FORMS TAKEN WITH CONTROL 3 SET TO PRODUCE 50 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1. All controls set for normal operation, No signal applied.
2. Resistance values are in ohms unless otherwise noted.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1952
SONORA MODEL 352



CHASSIS TOP VIEW

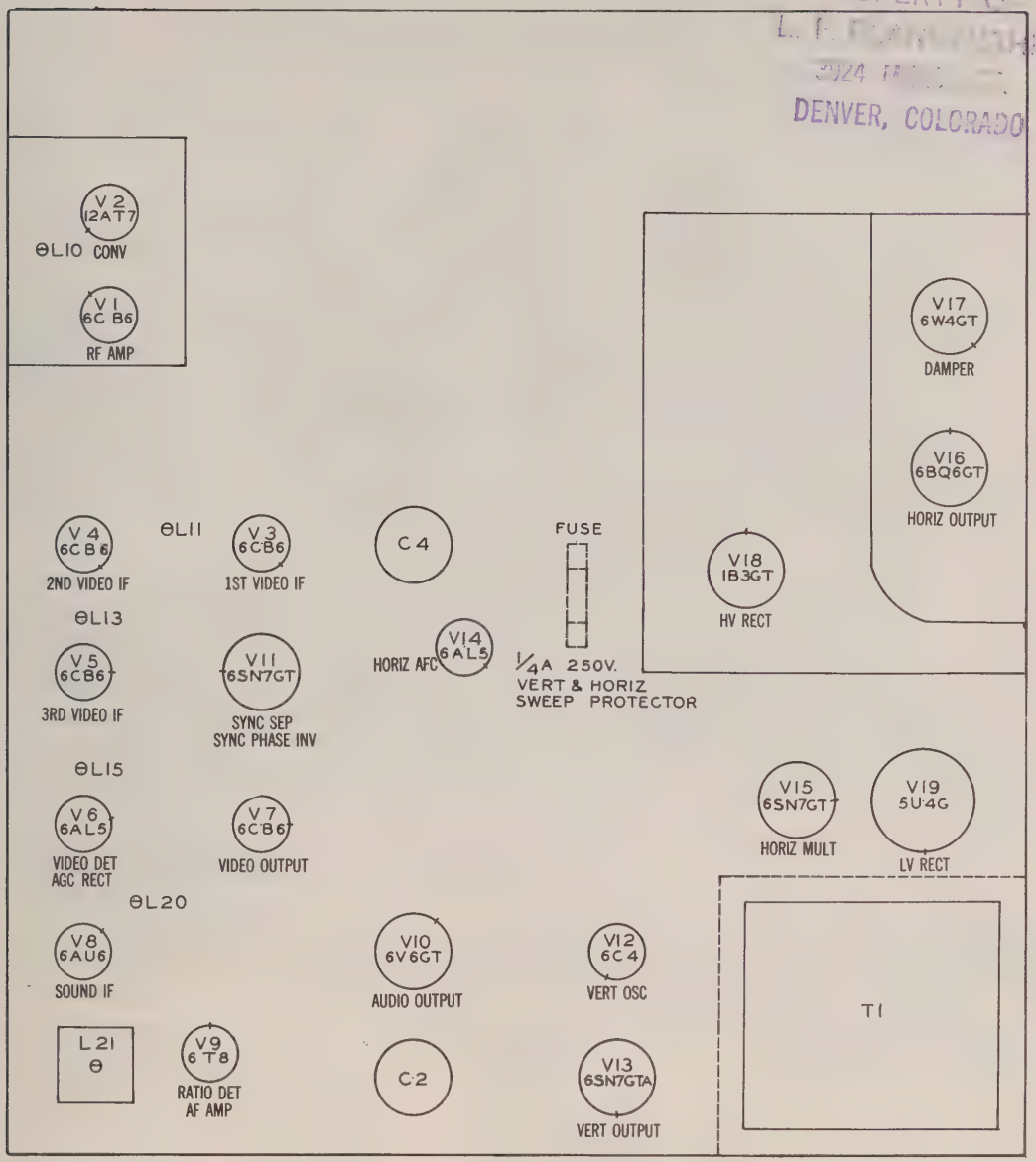
3924 [illegible]
DENVER, COLORADO



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART

PROPERTY OF
L. F. [illegible]
3024 [illegible]
DENVER, COLORADO



TOP VIEW

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound-V19

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster-V2, V3, V4, V5, V6, V7, V10
No pic, no sound, has snow-V1, V2, V3
No pic, has sound, has raster-V7, V20
Has pic, no sound-V8, V9, V10
Overloaded picture-V6

SYNC FAILURE
No vert. sync.-V11, V12
No horiz. sync.-V11, V14, V15
No vert. or horiz. sync.-V11

SWEEP FAILURE
No raster, has sound-V15, V16, V17, V18, V20, Fuse (M1)
No vertical deflection-V13
Poor vert. linearity or foldover-V12, V13
Poor horiz. linearity or foldover-V15, V16, V17
Narrow picture-V15, V16, V17, V18, V19
Vert off freq.-V12
Horiz. off freq.-V11, V14, V15

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal multivibrator tube, V15, from its socket.

VIDEO IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over converter tube, V2. Low side to chassis.	25.5MC (Unmod)	Tune to point of non-interference.	DC probe to point (A). Common to chassis.	A1, A2	Adjust for maximum deflection. Attenuate generator to minimum usable output.
2.	"	"	23.0MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal imput of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over converter tube V2. Low side to chassis.	24MC (10MC Swp)	22.8MC 26.1MC	Tune to point of non-interference.	Vert amp to point (A) Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 and A2 for correct marker placement at 26.1MC and adjust A3 and A4 for correct marker placement at 22.8MC.

SOUND ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ resistors in series from point B to point C . The junction of the two resistors is alignment point (D).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to pin 1 (grid) of 6CB6 (V7). Low side to chassis.	4.5MC (Un mod)	Point of non-interference.	DC probe to point (B) Common to point (C) (Caution-These are approximately 145V above chassis. Avoid touching or shorting VTVM case).	A5, A6	Adjust for maximum deflection.
5.	"	"	"	"	DC probe to point (E) Common to point (D)	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to pin 1 (grid) of 6CB6 (V7). Low side to chassis.	4.5MC (450KC Swp)	4.5 MC	Point of non-interference.	Vert amp to point (B) Low side to chassis.	A5, A6	Disconnect stabilizer capacitor , C6. Adjust for curve of maximum amplitude and symmetry as in fig. 2.
5.	"	"	"	"	"	Vert amp to point (E) Low side to chassis.	A7	Reconnect capacitor C6. Adjust so that 4.5MC occurs at center of crossover lines as in fig 3. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

TUNER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	85MC (10MC Swp)	83.25MC	6	Vert. Amp. to point (A). Low side to chassis.	A8	Adjust so that the video marker occurs at 60% on video side of the response curve as in fig. 4. As A8 is turned clockwise video marker should move up on response curve. If not it is on audio side of curve and A8 must be turned counter clockwise for correct marker placement.
7.	"	"	"	83.25MC 87.75MC	"	"	A9, A10	Adjust for maximum amplitude of response curve without decrease of band width .
8.	"	"	57MC (10MC Swp)	55.25MC 59.75MC	2	"		Check for correct marker placement as in fig. 4.
9.	"	"	213MC (10MC Swp)	211.25MC	13	"	A11	Adjust so that video marker occurs at 60% on video side of response curve as in fig.4.
10.	"	"	"	211.25MC 215.75MC	"	"	A12, A13	Adjust for maximum amplitude of response curve without decrease of bandwidth.
11.	"	"	177 MC (10MC Swp)	175.25MC 179.75MC	7	"		Check for correct marker placement as in fig. 4.

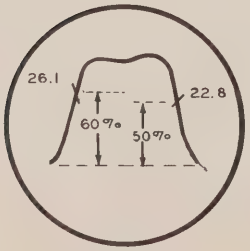


FIG. 1

FIG. 2

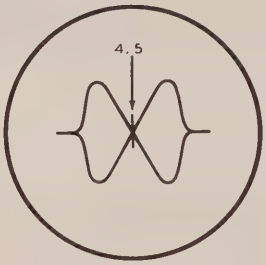


FIG. 3

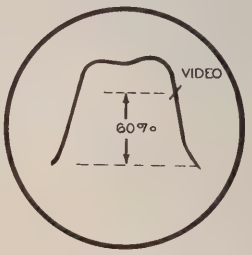
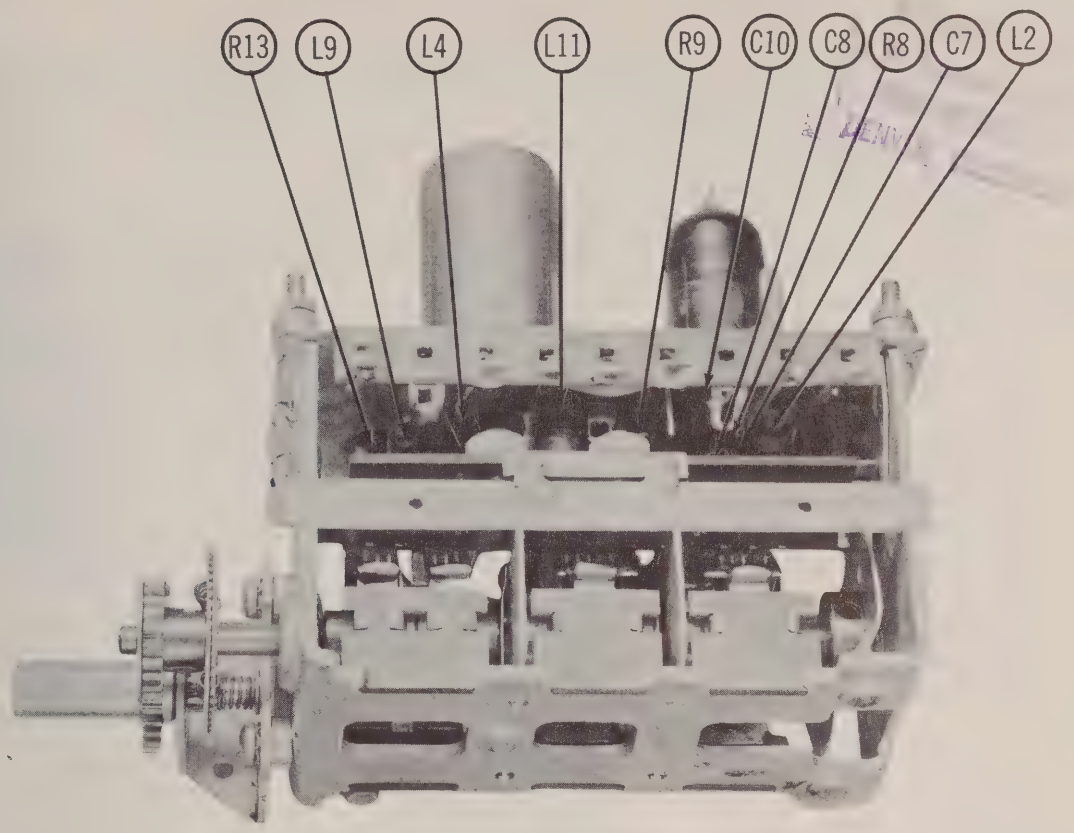
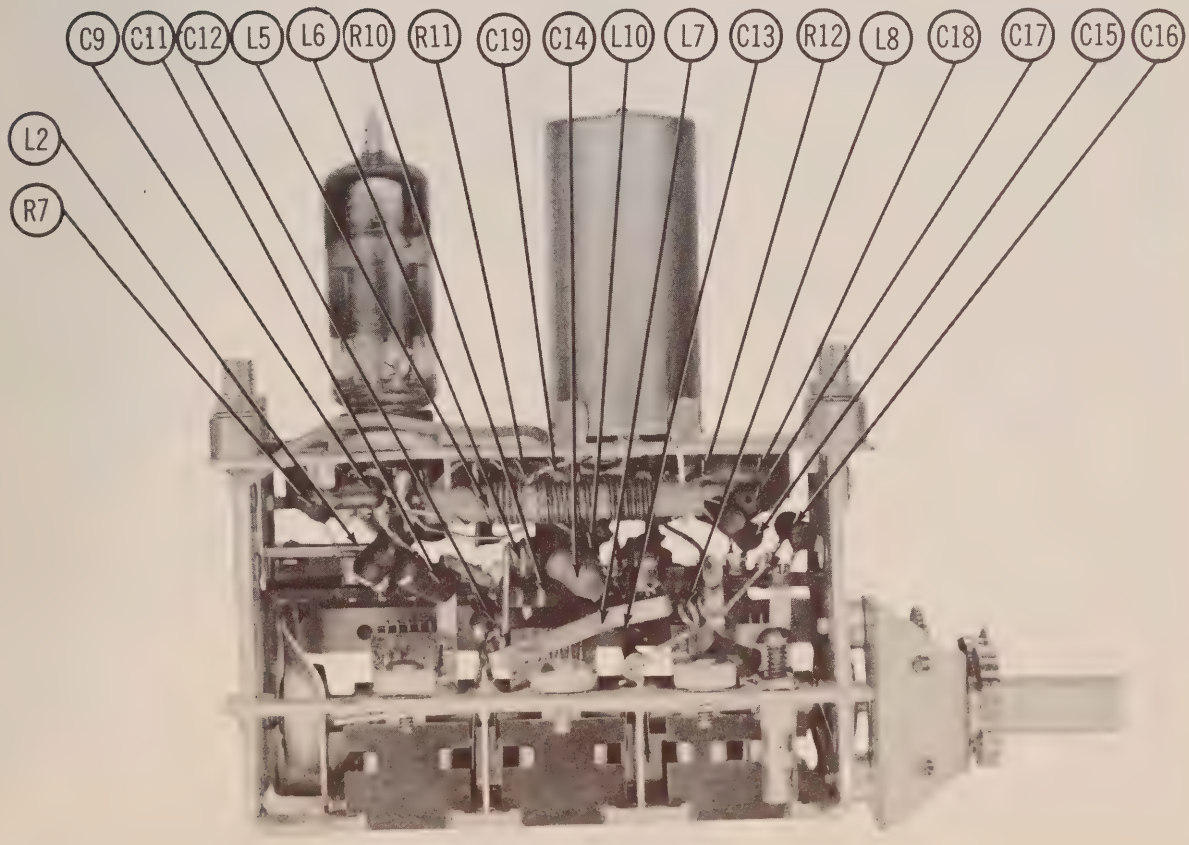


FIG. 4



RF TUNER-RIGHT SIDE

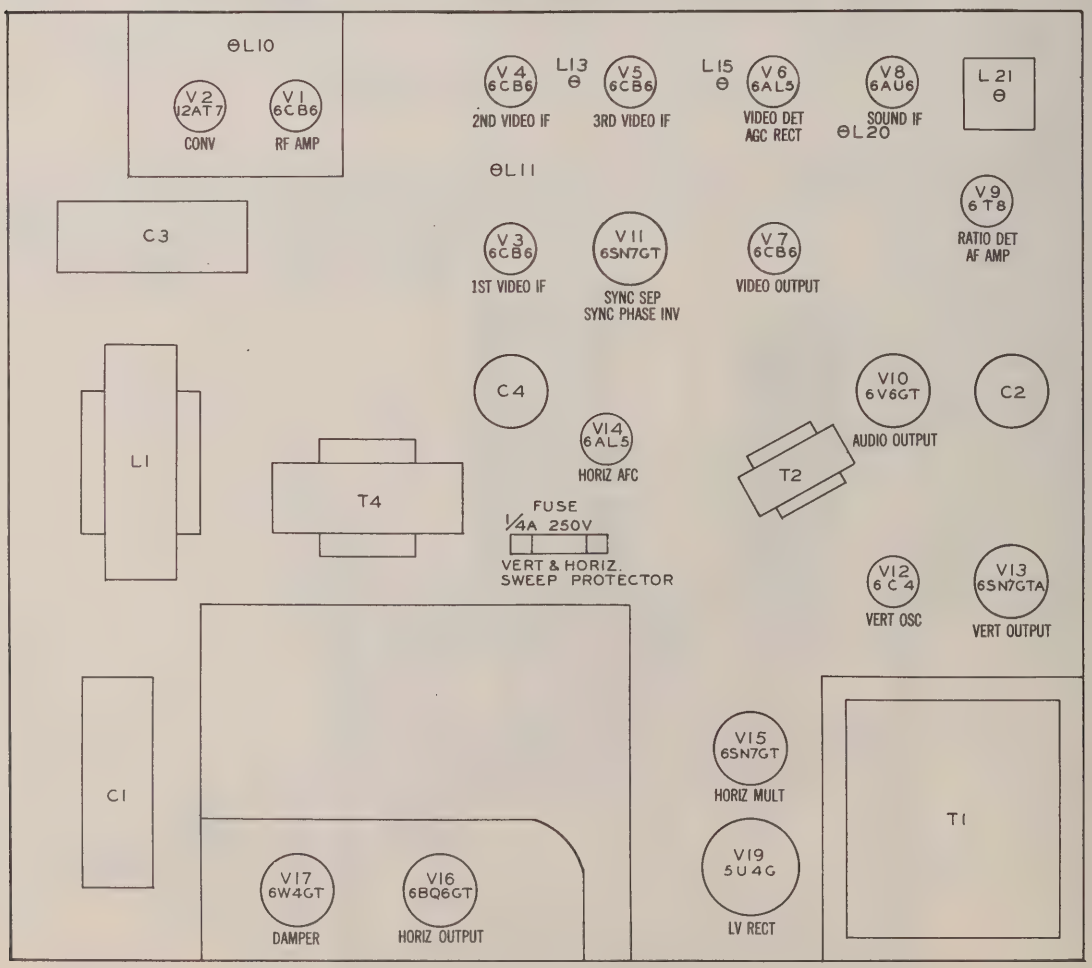


RF TUNER-LEFT SIDE

RESISTANCE MEASUREMENTS

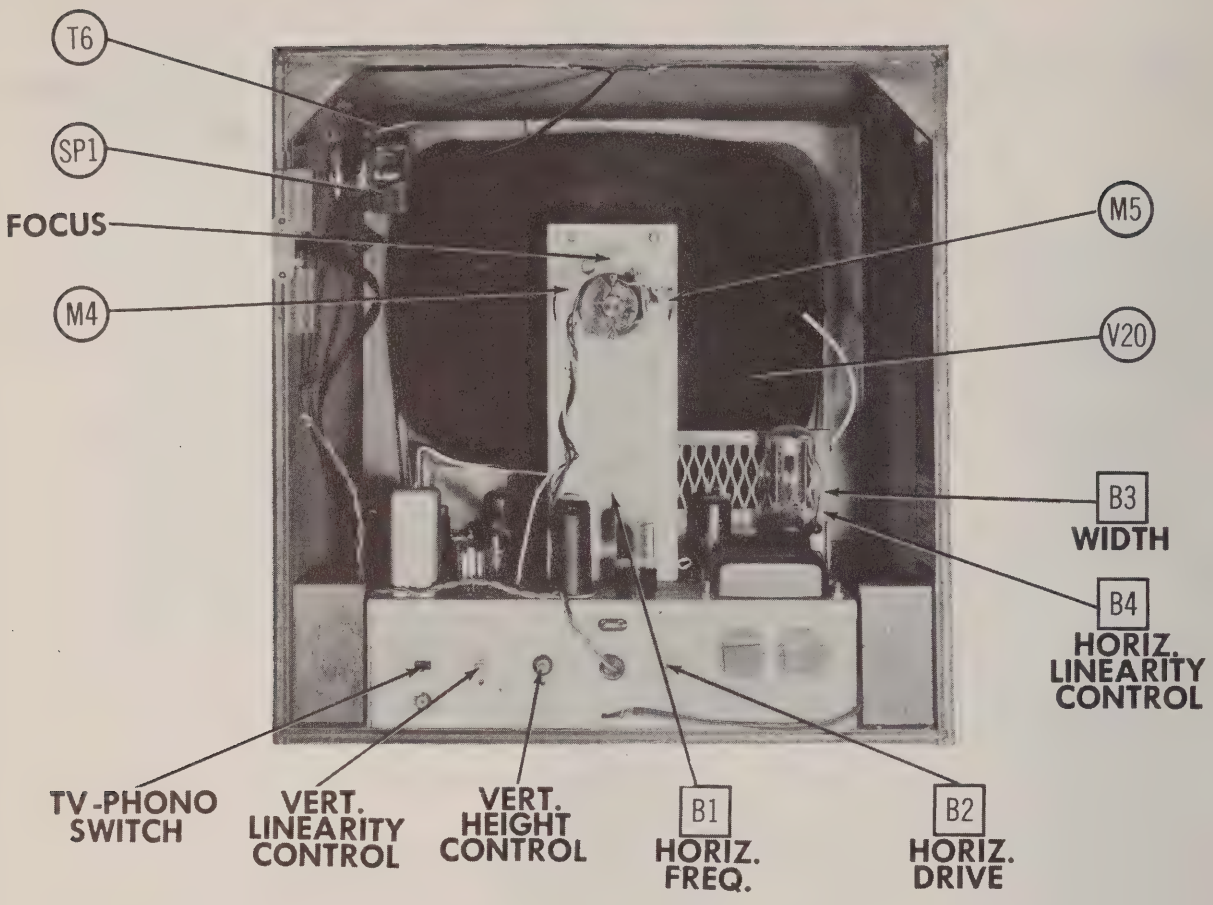
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	1.5Meg	0Ω	.2Ω	0Ω	■2.8KΩ	■2.8KΩ	0Ω		
V 2	12AT7	■100Ω	100KΩ	0Ω	0Ω	0Ω	■570Ω	18KΩ	.2Ω	.2Ω
V 3	6CB6	1.5Meg	129Ω	.1Ω	0Ω	■1.1KΩ	■1.1KΩ	0Ω		
V 4	6CB6	1.5Meg	129Ω	.1Ω	0Ω	†10KΩ	■1KΩ	0Ω		
V 5	6CB6	.2Ω	150Ω	.1Ω	0Ω	■560Ω	■560Ω	150Ω		
V 6	6AL5	.2Ω	680KΩ	.1Ω	0Ω	2KΩ	INF	6.8KΩ		
V 7	6CB6	1 Meg	550Ω	.1Ω	0Ω	†10KΩ	■0Ω	0Ω		
V 8	6AU6	■150KΩ	■0Ω	■0Ω	■.1Ω	†1KΩ	†7.5KΩ	■0Ω		
V 9	6T8	INF	■12KΩ	INF	■.1Ω	■0Ω	■0Ω	■0Ω	■6.8Meg	†220KΩ
V 10	6V6GT	INF	■.1Ω	†460Ω	†65Ω	230KΩ	130KΩ	■0Ω	10KΩ	
V 11	6SN7GT	■1Meg	■4.2KΩ	2.2KΩ	1.1Meg	■1Meg	22KΩ	0Ω	.1Ω	
V 12	6C4	#2Meg	INF	.1Ω	0Ω	#2Meg	1.5Meg	0Ω		
V 13	6SN7GTA	2.2Meg	#6.6KΩ	1.5KΩ	2.2Meg	#6.6KΩ	1.5KΩ	.1Ω	0Ω	
V 14	6AL5	56Ω	56Ω	0Ω	.1Ω	4.8Meg	INF	4.8Meg		
V 15	6SN7GT	130KΩ	#190KΩ	1.2KΩ	5.1Meg	#15KΩ	1.2KΩ	.1Ω	0Ω	
V 16	6BQ6GT	INF	.1Ω	INF	†33KΩ	470KΩ	INF	0Ω	100Ω	Top Cap #55Ω
V 17	6W4GT	INF	INF	550KΩ	INF	†74Ω	INF	■.1Ω	■0Ω	
V 18	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap #305Ω
V 19	5U4G	INF	16KΩ	INF	24Ω	INF	23Ω	INF	16KΩ	
V 20	17BP4A	0Ω	69KΩ	Pin 10 †100KΩ	Pin 11 100KΩ	Pin 12 .1Ω				

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V19
# MEASURED FROM PIN 3 OF V17
■ MEASURED FROM 145VDC LINE



BOTTOM VIEW

TUBE PLACEMENT CHART



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at the center of its range.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. The sync range of the horizontal hold control should be equally spaced on each side of the center position.

Adjust the horizontal drive trimmer (B2) in a maximum counter clockwise direction without the presence of vertical white lines in the picture.

Adjust the width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

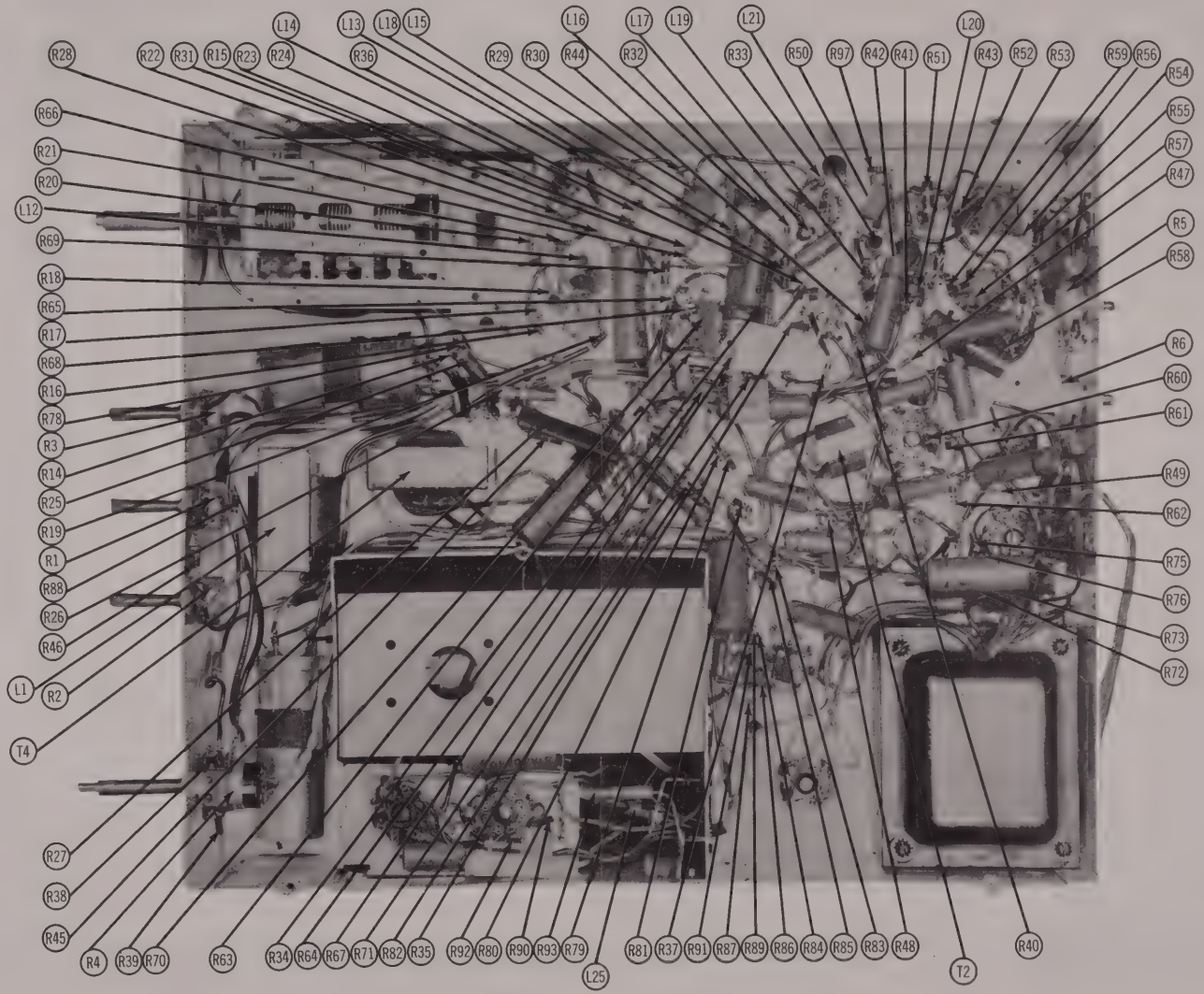
Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 7 wood screws. Remove rear cover.
3. Disconnect builtin antenna & speaker.
4. Remove 2 wood screws. Remove antenna bracket.
5. Remove 5 chassis. bolts. Remove chassis.
6. Remove 2 wood screws holding speaker . Remove speaker.

NOTE:
FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

L. F. BLA[illegible]
3524 MEADE ST.
DENVER, COLORADO



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6CB6	6CB6	7CM	
V2	Converter	1AT7	12AT7	9A	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Detector-AGC Rectifier	6AL5	6AL5	6BT	
V7	Video Output	6CB6	6CB6	7CM	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Detector-Sync Separator-Sync Phase Inv.	6T8	6T8	9E	
V10	Audio Output	6V6GT	6V6GT	7AC	
V11	Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V12	Vert. Oscillator	6C4	6C4	6BG	
V13	Vert. Output	6SN7GTA	6SN7GTA	8BD	
V14	Horiz. AFC	6AL5	6AL5	6BT	
V15	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V16	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V17	Damper	6W4GT	6W4GT	4CG	
V18	HV Rectifier	1B3GT	1B3GT	3C	
V19	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: SYLVANIA PART No.		RMA BASE TYPE	NOTES
V20	17BP4A	17BP4A		12D	① Circuit changes necessary
		17BP4	①	12D	
		17HP4	①	12C	
		17RP4	①	12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C1A	±60	450	N-8036	AFH2-81		UPT8245		FP340	TVL-2770	
B	±40	450								
C2A	±10	450	N-8039	AFH2-47		UPT1145		FP331	TVL-2750	
B	±10	450								
C3A	±40	200	N-8040	AFH4-120		UPT436		FP455	TVL-4700	
B	±100	50								
C	10	450								
D	±80	200								
C4	100	250	N-8037	AFH1-36		UP8025		FP137	TVL-1535	
								TC59		
C5	4	50	N-8054	PRS150/4		BR550		TC30	TVA-1303	
C6	16	50	N-6913	PRS150/16		BR1615		TC44	TVA-1409	
C7	1000			SI100	D6-101	TM5TS	GP1K-101	UC-531	5GA-T1	
C8A	1000			BPD-2X001	DD-2-102	TM5DD1	812-001	DCD-521	5HK-2D1	
B	1000									
C9	500			SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	
C10	1500		N-7371	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C11	500			SI500	D6-501	TM5T5	GP3K-501	UC-535	5GA-T5	
C12	25			SI25	D6-250		GP1K-250	UC-5425	5GA-Q25	
C13	33				TCN-33		N750K-330		5TCU-Q33	
C14	47			SI47N750	TCN-47		N750K-470	NT-5447	5TCU-Q47	
C15	15				TCN-15		N750K-150		5TCU-Q15	
C16	30				TCN-30		N750K-300			
C17	2			SI2	TC2-4.7		GP1K-050	ZT-555	5GA-V5	
C18A	1000			BPD-2X001	DD-2-102	TM5DD1	812-001	DCD-521	5HK-2D1	
B	1000									
C19	20			SI20NP0	TCZ-20		NP0K-200	ZT-542	5TCC-Q2	
C20	5000		N-8272	BPD-005	DD-502	TM5D5	81-005	DC-525	5HK-D5	
C21	.1	200	N-1351	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C22	100		N-8015	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C23	1000		N-8887	BPD-102	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C24	5000		N-8272	BPD-005	DD-502	TM5D5	81-005	DC-525	5HK-D5	
C25	1500		N-7371	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C26	5000		N-8272	BPD-005	DD-502	TM5D5	81-005	DC-525	5HK-D5	
C27	100		N-8015	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C28	1000		N-8887	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C29A	4000		N-7774	BPD-2X004	D6-402	TM5DD4	822-004	DCD-524	5HK-2D4	
B	4000				D6-402					
C30	1500		N-7371	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	
C31	5000		N-8272	BPD-005	DD-502	TM5D5	81-005	DC-525	5HK-D5	
C32	100		N-8015	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C33	5000		N-8272	BPD-005	DD-502	TM5D5	81-005	DC-525	5HK-D5	
C34A	4000		N-7774	BPD-2X004	D6-402	TM5DD4	822-004	DCD-524	5HK-2D4	
B	4000				D6-402					
C35	100		N-8015	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C36	100		N-8015	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C37	.1	200	N-1479	P488-25		PJ2P25		PT4025	2TM-P25	
C38	.01	400	N-1344	P488-01	D6-103	PTE48I	GP2-333-103	PT4I	4TM-S1	
C39	5000		N-8272	BPD-005	DD-502	TM5D5	81-005	DC-525	5HK-D5	
C40	10		N-7843	SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C41	.05	300	N-1345	P288-05	DF-503	PJ2S5		PT405	2TM-S5	
C42	220	500	N-8106	1466-00025	D6-221	5W5T25	GP2K-221	MC240	1FM-S25	
C43	.47	300	N-7838	1469-00005		SR5Q5		MCB-225	MS-45	
C44	.1	400	N-1623	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C45	.1	200	N-1351	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C46	.1	400	N-1623	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C47	5		N-7778	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C48	68		N-7844					N080-338-680		
C49	47	500	N-7836	1468-00005	D6-470	5W5Q5	GP1K-470	MC225	1FM-45	
C50	5000		N-8272	BPD-005	DD-502	TM5D5	81-005	DC-525	5HK-D5	
C51	5000		N-8272	BPD-005	DD-502	TM5D5	81-005	DC-525	5HK-D5	
C52	5000		N-8272	BPD-005	DD-502	TM5D5	81-005	DC-525	5HK-D5	
C53	.02	400	N-1376	P488-02	DF-203	PTE482		PT412	4TM-S2	

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: MALLORY PART No.	REPLACEMENT DATA: SPRAGUE PART No.	NOTES
C54	2200	500	N-6891	1467-0025	D6-222	1W5D25	GP2-333-222	MC 460		
C55	3900	500	N-6892	1467-004	D6-392	1D5D4	GP2-333-392	MC463	1FM-24	
C56	5000		N-8272	BPD-005	DD-502	TM5D5	81-005	DC-525	5HK-D5	
C57	.02	400	N-1376	P488-02	DF-203	PTE482		PT412	4TM-S2	
C58	.08	200	N-8092							
C59	.005	600	N-4894	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C60	100		N-8015	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C61	.02	400	N-1376	P488-02	DF-203	PTE482		PT412	4TM-S2	
C62	5000		N-8272	BPD-005	DD-502	TM5D5	81-005	DC-525	5HK-D5	
C63	.005	600	N-4894	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C64	5000		N-8272	BPD-005	DD-502	TM5D5	81-005	DC-525	5HK-D5	
C65	.05	300	N-1345	P288-05	DF-503	PJ2S5		PT405	2TM-S5	
C66	5000		N-8272	BPD-005	DD-502	TM5D5	81-005	DC-525	5HK-D5	
C67	.1	400	N-1623	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C68	220	500	N-8106	1466-00025	D6-221	5W5T25	GP2K-221	MC240	1FM-325	Note 1
C69	.5	200	N-6896	P288-5				PT405	2TM-P5	
C70A	.002			P688-002		PTE6D2		PT622		
B	.005		} eN-8042	P688-005	} ePC-100	PTE6D5	} e1405-01	PT625	} e101C1	
C	.005			P688-005		PTE6D5		PT625		
C71	4700	500	N-8892	1464-005		IDR5D5		MCB485	MS-25	
C72	.1	400	N-1623	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C73	.25	400	N-2579	P488-25		PTE4P25		PT4025	4TM-P25	
C74	.05	600	N-1346	P688-05	DF-503	PTE6S5		PT615	6TM-S5	Note 1
C75	.02	600		P688-02	DF-203	PTE6S2		PT612	6TM-S2	Note 1
C76	.05	300	N-1345	P288-05	DF-503	PJ2S5		PT415	2TM-S5	Note 1
C77	100	500	N-7783	1464-001		IR5D1		MCB255	MS-31	
C78	100	500	N-7783	1464-001		IR5D1		MCB255	MS-31	
C79	.1	200	N-1351	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C80	.05	800	N-8105	P1088-05		PTE10S5		PT1015	MB-55	
C81	.005	600	N-4894	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C82	.2	200	N-1351	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C83	3900	500	N-7373	1464-004		IDR5D4		MCB463	MS-34	
C84	330	500	N-7777	1469-00035						
C85	390	500	N-8890	1469-0004		5T5T4		MCB243	MS-34	
C86	270	500	N-8074	1469-0003		SR5T3		MCB241	MS-33	
C87	.25	400	N-2579	P488-25		PTE4P25		PT4025	4TM-P25	
C88	.5	200	N-8896	P288-5		PJ2P5		PT405	2TM-P5	
C89	1500	500	N-8073	1464-0015		IR5D15		MCB456		
C90	.25	600	N-8895	684-25		PTE6P25		PT6025	6TM-P25	
C91	.05	800	N-8105	P1088-05		PTE10S5		PT1015	MB-55	
C92	500	20000	N-8041	HV20C	TV3-502	MM-C20T5	413-501		20DK-T5	
C93	.01	600	N-6979	692ZGXY-01		P768I		PT611	6TM-S1	
C94	.01	600	N-6979	692ZGXY-01		P768I		PT611	6TM-S1	

Note 1. Not used in all models.
e Items C70A, C70B, C70C, R70A, R70B, R70C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: MALLORY PART No.	INSTALLATION NOTES
R1A	50KΩ	½	N-8280	Q11-123	AG-44-5	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R1A
R2A	50KΩ	½	N-8280	Q11-123	AG-44-5	AB-31	U-35	Brightness
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R2A
R3A	1Meg	½	N-8279	Q11-137	AG-61-5	AB-49	U-54	Vert Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R3A
R4A	2500Ω	1	N-8158	QJ-23 *	RTV-342	SB5T-707-S	UF252L	Contrast-Tapped ② 500Ω-Panel
B	500KΩ	1					UR55A	Volume-Rear
C	Switch	1					US-26	Attach to R4B
R5A	3000Ω	½	N-8071	Q11-113	AG-15-8	AB-8	U-8	Vert linearity
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R5A
R6A	2.5Meg	½	N-7341	QJ-239	AG-84-8	AB-83	SU-565	Height
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R6A

* CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B17-111X & P1-200 (Panel)
B13-153 & R2-213 (Rear) & SWITCH 78-1.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R7	100KΩ	½		BTS-100K	
R8	100Ω	½		BTS-100	
R9	2700Ω	½		BTS-2700	Note 1
R10	2200Ω	½		BTS-2200	
R11	100KΩ	½		BTS-100K	
R12	18KΩ-5%	½	N-6424	BTS-18K 5%	
R13	470Ω	½		BTS-470	
R14	100Ω	½	N-1349	BTS-100	
R15	4700Ω	½	N-7000	BTS-4700	
R16	6800Ω	½	N-4630		
R17	47Ω	½	N-8237		
R18	82Ω	½	N-5857	BTS-82	
R19	1000Ω	½	N-1694	BTS-1000	
R20	1000Ω	½	N-1694	BTS-1000	
R21	15KΩ	½	N-6424	BTS-15K	
R22	47Ω	½	N-8237		
R23	82Ω	½	N-5857	BTS-82	
R24	1000Ω	½	N-1694	BTS-1000	
R25	15KΩ	2	N-2970	BTS-15K	
R26	47KΩ	2	N-8033	BTS-47K	
R27	13KΩ	4	N-6036	1 3/4A-13.5K	
R28	1000Ω	½	N-1694	BTS-1000	
R29	6800Ω	½	N-4630		
R30	150Ω	½	N-2663	BTS-150	
R31	560Ω	½	N-4280	BTS-560	
R32	820KΩ	½	N-4469	BTS-820K	
R33	680KΩ	½	N-7403	BTS-680K	
R34	6800Ω	½	N-4630	BTS-6800	
R35	100Ω	½	N-1349		
R36	1 Meg	½	N-2976	BTS-1 Meg	
R37	47Ω	½	N-8237		

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R38	180Ω	½	N-4067	BTS-180	
R39	1500Ω	½	N-7398	BTS-1500	
R40	18KΩ	2	N-8031	BTS-18K	
R41	15KΩ	3	N-3970	BTS-1 5K	
R42	33KΩ	1	N-8044	BTA-33K	
R43	4700Ω	1	N-7154	BTA-4700	
R44	2200Ω	½	N-4895	BTS-2200	
R45	180KΩ	1		BTA-180K	Note 2
R46	6800Ω	½	N-6830	BTS-6800	Note 3
R47	68KΩ	½	N-4120	BTS-68K	
R48	47KΩ	½		BTS-47K	Note 4
R49	100KΩ	½	N-1778	BTS-100K	
R50	150KΩ	½	N-4468		
R51	27KΩ	1	N-7012	BTA-27K	
R52	8200Ω	1	N-8043	BTA- 8200	
R53	1000Ω	½	N-3341	BTS-1000	
R54	560Ω	½	N-4280	BTS-560	
R55	15KΩ	½	N-6424	BTS-15K	
R56	270Ω	½	N-4131	BTS-270	
R57	12KΩ	½	N-5690	BTS-12K	
R58	6.8Meg	½	N-4038	BTS- 6.8Meg	
R59	220KΩ	½	N-4896	BTS-220K	
R60	300KΩ-5%	½	N-8025	BTS-300K-5%	
R61	100KΩ	½	N-2973	BTS-100K	
R62	180KΩ	½	N-7003	BTS-180K	
R63	560KΩ	½	N-7790	BTS-560K	Note 4
R64	560KΩ	½	N-7790	BTS-560K	
R65	22KΩ	½	N-8018	BTS-22 K	
R66	1 Meg	½	N-2976	BTS-1Meg	
R67	2200Ω	½	N-4896	BTS-2200	
R68	1500Ω	½	N-7398	BTS-1500	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R69	2700Ω	½		BTA-2700	
R70A	32KΩ	½		BTS-32K	
B	8200Ω	½	eN-8042	BTS-8200	
C	8200Ω	½		BTS-8200	
R71	1.2Meg	½	N-4470	BTS-1.2Meg	
R72	1 Meg	½	N-2976	BTS-1Meg	
R73	1800Ω	½	N-4281	BTS-1800	
R74	56KΩ	½	N-4823	BTS-56K	
R75	3.3Meg	½	N-4454	BTS- 3.3Meg	
R76	820Ω	1		BTA-820	
R77	5300Ω	4	N-8287	1 3/4A-5000	
R78	18KΩ	2		BTS-18K	Note 5
R79	100KΩ	½	N-2973	BTS-100K	
R80	100KΩ	½	N-2973	BTS-100K	
R81	4.7Meg	½	N-4081	BTS-4.7Meg	
R82	56Ω	1	N-8155		
R83	470KΩ	½	N-4066	BTS-470K	
R84	1200Ω	1	N 8792	BTS 1200	
R85	5800Ω	½	N-7408	BTA-5800	
R86	100KΩ-5%	½	N-3973	BTS-100K-5%	
R87	180KΩ	½	N-7003	BTS-180K	
R88	100KΩ	½	N-2973	BTS-100K	
R89	4700Ω	½	N-7154	BTS-4700	
R90	100Ω	½	N-1349		
R91	470KΩ	½	N-5694	BTS-470K	
R92	100Ω	2	N-8030	BW-2-100	
R93	33KΩ	2	N-8032	BTS-33K	
R94	10KΩ	2	N-4229	BTS-10K	
R95	4.3Ω	½	N-8126		
R96	470KΩ	½	N-8029		
R97	150KΩ	½	N-4468	BTS-150K	

* Items R70A, R70B, R70C, C70A, C70B, C70C are combined in one unit.
Note 1 Some models use a 1000Ω resistor in this application.
Note 2 Some models use a 390KΩ resistor in this application.
Note 3 Some models use a 15KΩ resistor in this application.
Note 4 Not used in all models.
Note 5 Some models use a 10KΩ resistor in this applicatbn.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.
T1	117VAC	660VCT	5VAC	6.3VAC	N-8069		P-3070	TP-356	R-35BC
	② 1.8A	.220ADC	③ 3A	④ 6.3A					
				SEC. 4					
				6.3VAC					
				⑤ 2.5A					

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No	REPLACEMENT DATA: TRIAD PART No	NOTES
T2	170Ω	1KΩ	N-7764	A-8125 ①	A-3000 ①	TBO-2	A-97X ②	Vert. Osc. Trans.
T3	270Ω	9Ω Tap	N-8104	A-8130	HVO-7 ②	TFB-5		Horiz. Output Trans.
	tap ③ 200Ω	④ 60Ω	N-8070 ⑦					
		SEC. 2						
T4	1300Ω	0Ω	N-7717	A-8123	A-3037	TSO-8	A-102X	Vert. Output Trans.
	Tap ④							
	12Ω							
T5A	9Ω		N-8057-47	DY-8	MDF-70	TY-2	Y-12	Horiz. Deflection Coils
B	53Ω		N-8057 ③					Vert. Deflection Coils

① Drill one new mtg. hole.
② Alternate Horiz. output trans.(Mount on wooden spacers.)
③ Alternate Deflection yoke.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.	NOTES
T6	5.3KΩ	3.5Ω	395Ω	.9Ω	C-8370	A-3877	A-2930	RO-8 ①	S-6X	① Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: JENSEN PART No	REPLACEMENT DATA: QUAM PART No	NOTES
SP1	4"	PM	3.5Ω	N-8170	8T-113 Mod P4-X	4A07	

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D.C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ᵐA)	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	REPLACEMENT DATA: TRIAD PART No.
L1	.220A	65Ω	2.3 Hy	N-8064	C-2325 ①	C-2996 ①	TR-3500 ①	C-25A

① Drill one new mtg. hole.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SONORA PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA IRC PART No.	NOTES
L2	Ant. Trans.	0Ω	0Ω				
L3	Ant. Coil	0Ω					
L4	Fil. Choke	.2Ω					1.8 Microhenries
L5	RF, Mixer Grid and Osc. Coils	0Ω					Low Band
L6	RF Coil						High Band
L7	Mixer Grid Coil	0Ω					High Band
L8	Osc. Coil	0Ω					High Band
L9	Cathode Choke	.2Ω					1.8 Microhenries
L10	RF Choke	0Ω					Not used in all models.
L11	lst. Video IF	0Ω					
L12	2nd. Video IF	.2Ω		N-7745	TV-102		
L13	RF Choke	8.2Ω		N-7321		CL-1	10 Microhenries
L14	3rd. Video IF	.2Ω		N-7745	TV-103		
L15	RF Choke	8.2Ω		N-7321		CL-1	10 Microhenries
L16	4th. Video IF	.2Ω		N-7745	TV-102		
L17	Series Peaking Coil	10Ω		N-8060	TV-184 †		174 Microhenries wound on 18K resistor
L18	Shunt Peaking Coil	20Ω		N-8059			933 Microhenries
L19	Series Peaking Coil	8.5Ω		N-8061	TV-187		217 Microhenries wound on 22K resistor
L20	Shunt Peaking Coil	14Ω		N-8062	TV-188 ■		578 Microhenries wound on 5.6K resistor
L21	Sound IF	1.2Ω		N-7746	TV-151		
L22	Ratio Detect.	3.7Ω	.4 CT	N-7744	TV-110 *		Tertiary Winding .4Ω
L23	Horiz. Osc.	70Ω		N-7748	TV-163		
L24	Width Coil	21Ω		N-8134			
L25	Horiz. Lin.	35Ω		N-8063	MWC-1		

* Drill new mtg. holes.
† Parallel with 18K resistor
■ Parallel with 5.6K resistor

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA SONORA PART No. FUSE	SONORA PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG (P/T)	1/4A 250V			318.250		GJV-1/4	

MISCELLANEOUS

ITEM No.	PART NAME	SONORA PART No.	NOTES
M2	RF Tuner	N-7750	
M3	Switch	N-8099	TV-Phono
M4	Focus Magnet	N-8067	
M5	Ion Trap	N-8272	
B2	Trimmer	N-7375	Horiz. Drive (20-270MMF)

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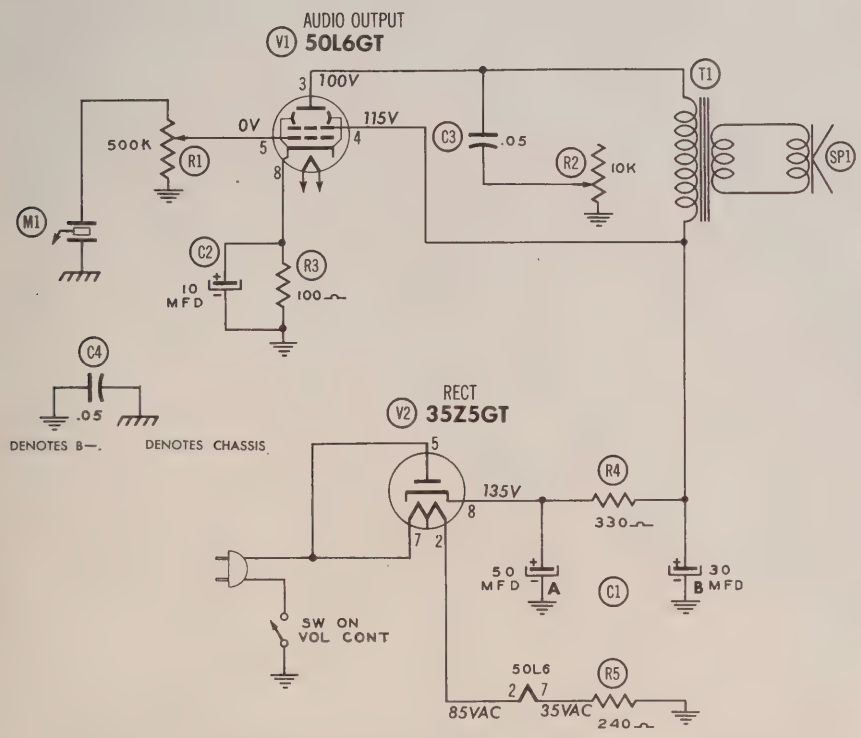
3924 [illegible]
DENVER, COLORADO

TRADE NAME	Steelman Model 327
MANUFACTURER	Steelmen Phono & Radio Co., Inc., 12-30 Anderson Ave., Mt. Vernon, N. Y.
TYPE SET	AC Operated Audio Amplifier With 3 Speed Manual Record Player
TUBES (TWO)	Types 50L6GT Audio Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	.270 Amp @ 117 Volts AC



Pin No.	50L6GT Res.	35Z5GT Res.
1	INF	INF
2	290Ω	290Ω
3	†498Ω	287Ω
4	†330Ω	INF
5	0Ω	325Ω
6	INF	INF
7	240Ω	325Ω
8	100Ω	35KΩ

† MEASURED FROM PIN 8 OF V2

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: STEELMAN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Audio Output	50L6GT	50L6GT	7AC	
V2	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STEELMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■50	150		AFH2-15		UP5315		FP213	TVL-2432	
B	▲30	150								
C2	10	25		PRS25/10		BR102A		TC22	TVA-1204	
C3	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C4	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STEELMAN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	VC1005	Q13-133	AG-60-Z	B-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A
R2A	10KΩ	½		Q13-116	AG-81-Z	B-15	U-18	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Steelman PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R3	100Ω	½		BTS-100	
R4	330Ω	1		BTA-330	
R5	240Ω	5		1 3/4A-250	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: STEELMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2KΩ	3.1Ω	166Ω	.66Ω	Part of spkr.	A-3332 ①	A-29 28 ①	RO-2 ①	S-2X ①	① Bend mtg. tabs down, file out slots, mount on original mtg. bracket.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: STEELMAN PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	4 x 6"	PM	3.1Ω	SP-46	46J6	46A07	

PHONO CARTRIDGE

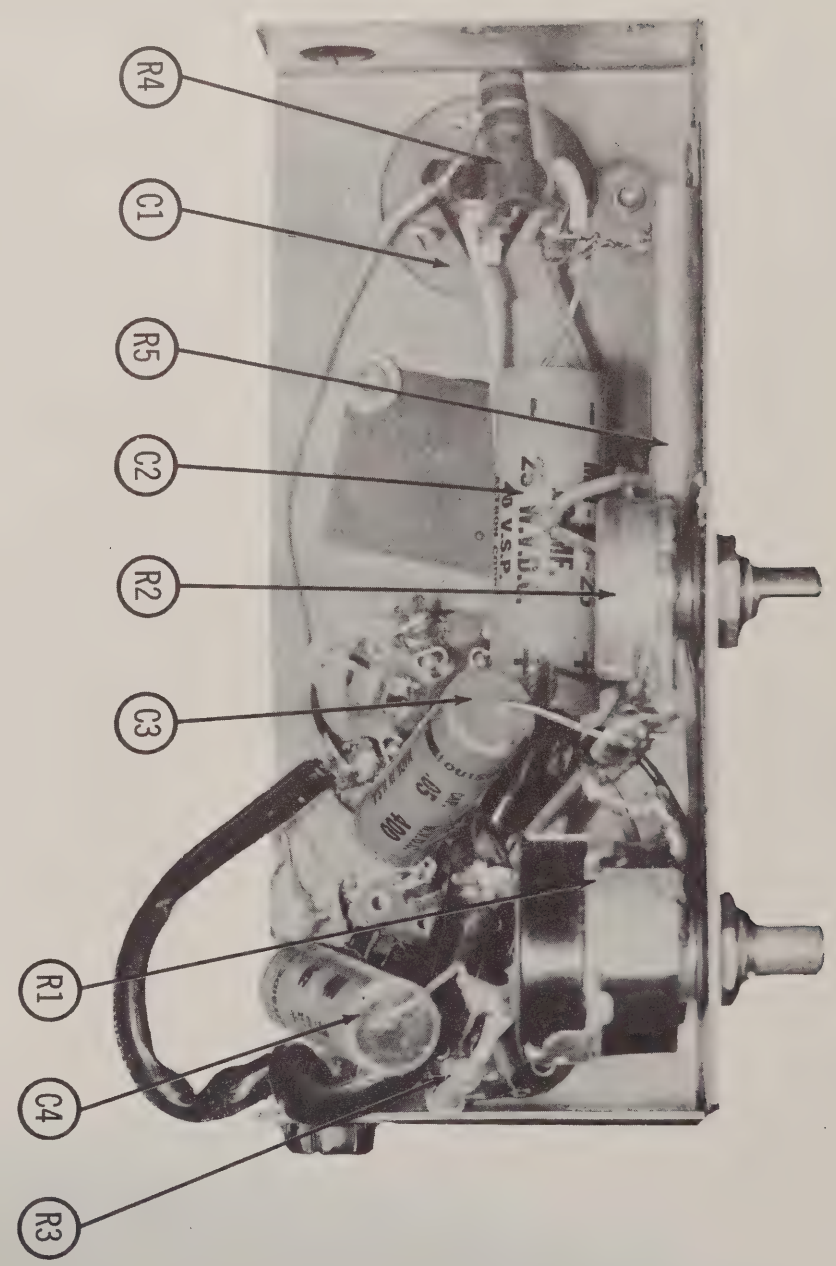
ITEM No.	REPLACEMENT DATA: STEELMAN PART No.	ASTATIC PART No.: CARTRIDGE	ASTATIC PART No.: NEEDLE	SHURE PART No.: CARTRIDGE	SHURE PART No.: NEEDLE	ELECTRO-VOICE PART No.: CARTRIDGE	ELECTRO-VOICE PART No.: NEEDLE	REMARKS
M1				901D*		*2600		*Tone Arm Assembly

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	STEELMEN PART No.	WALCO PART No.	JENSEN PART No.	REMARKS
M2		W-17A and W-17MGA	W-81 & W-82	

CHASSIS—BOTTOM VIEW



STEELMAN
MODEL 487

STEELMAN
MODEL 487

TRADE NAME	Steelman Model 487
MANUFACTURER	Steelman Phono & Radio Co., Inc., 12-30 Anderson Ave., Mt. Vernon, N.Y.
TYPE SET	AC Operated Audio Amplifier With 3 Speed Automatic Record Changer
TUBES (Three)	Types 12AV6 or 12AT6 AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC RATING .23 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT- SEE V-M MODEL 950 -PHOTOFACT SET #107 - FOLDER 13 OR RECORD CHANGER MANUAL CM-3

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

STEELMAN MODEL 487

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: STEELMAN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	AF Amplifier	12AV6	12AV6	7BT	
B	AF Amplifier	12AT6	12AT6	7BT	
V2	Audio Output	50C5	50C5	7CV	
V3	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: STEELMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■40	150		AFH3-10		UP44415		FP311.5	TVL-3440	
B	▲40	150								
C	20	150								
C2	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C3	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C4	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C5	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C6	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: STEELMAN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	VCD-200S				UF55A	Volume-Panel
B	500KΩ	½					UR55L	Tone - Rear
C	Switch						US-26	Attach to R1A

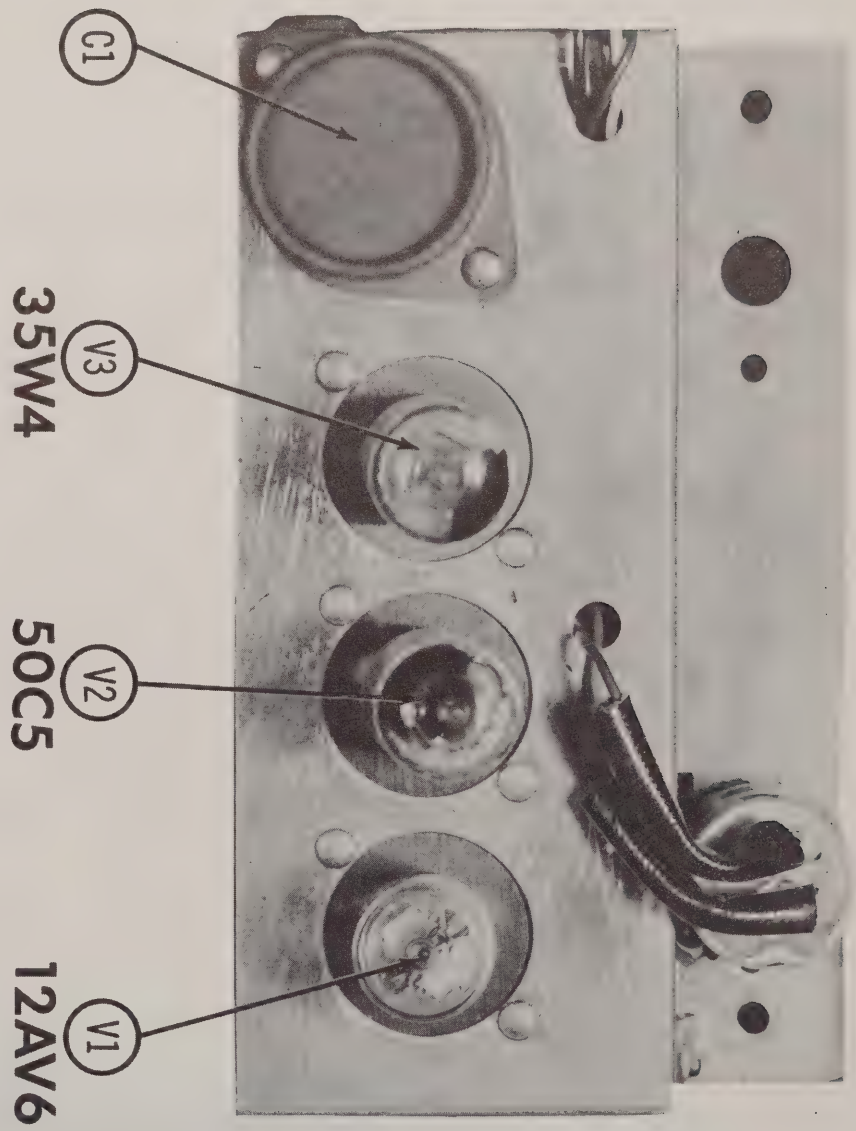
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: STEELMAN PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	4.7Meg	½		BTS-4.7Meg	
R3	220KΩ	½		BTS-220K	
R4	150Ω	½		BTS-150	
R5	330Ω	1		BTA-330	
R6	2200Ω	1		BTA-2200	
R7	140Ω	2			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: STEELMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2.2KΩ	3.2Ω	170Ω	.56Ω		~~A-8830~~ ①	A-2928 ①	RO-2 ①	S-2X ①	① Bend mtg. tabs down, file out slots, mount on original mtg. bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS.			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	STEELMAN PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.2Ω		ST-105 Mod. P5-X	5A07	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	STEELMAN PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		ACD-J	A-1 A-3	W-22AB	A62A A65MG	96	O-1 or S-1 and O-3 or S-3	

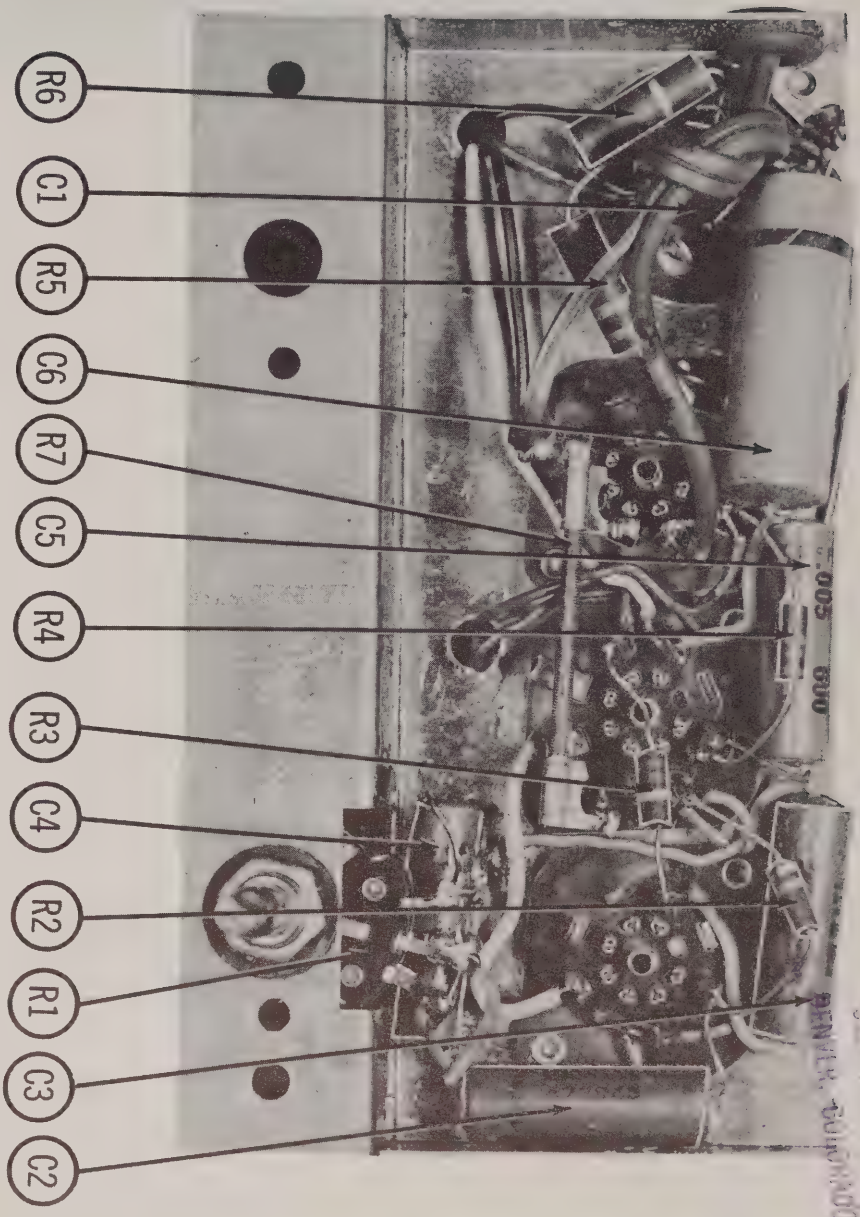
ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

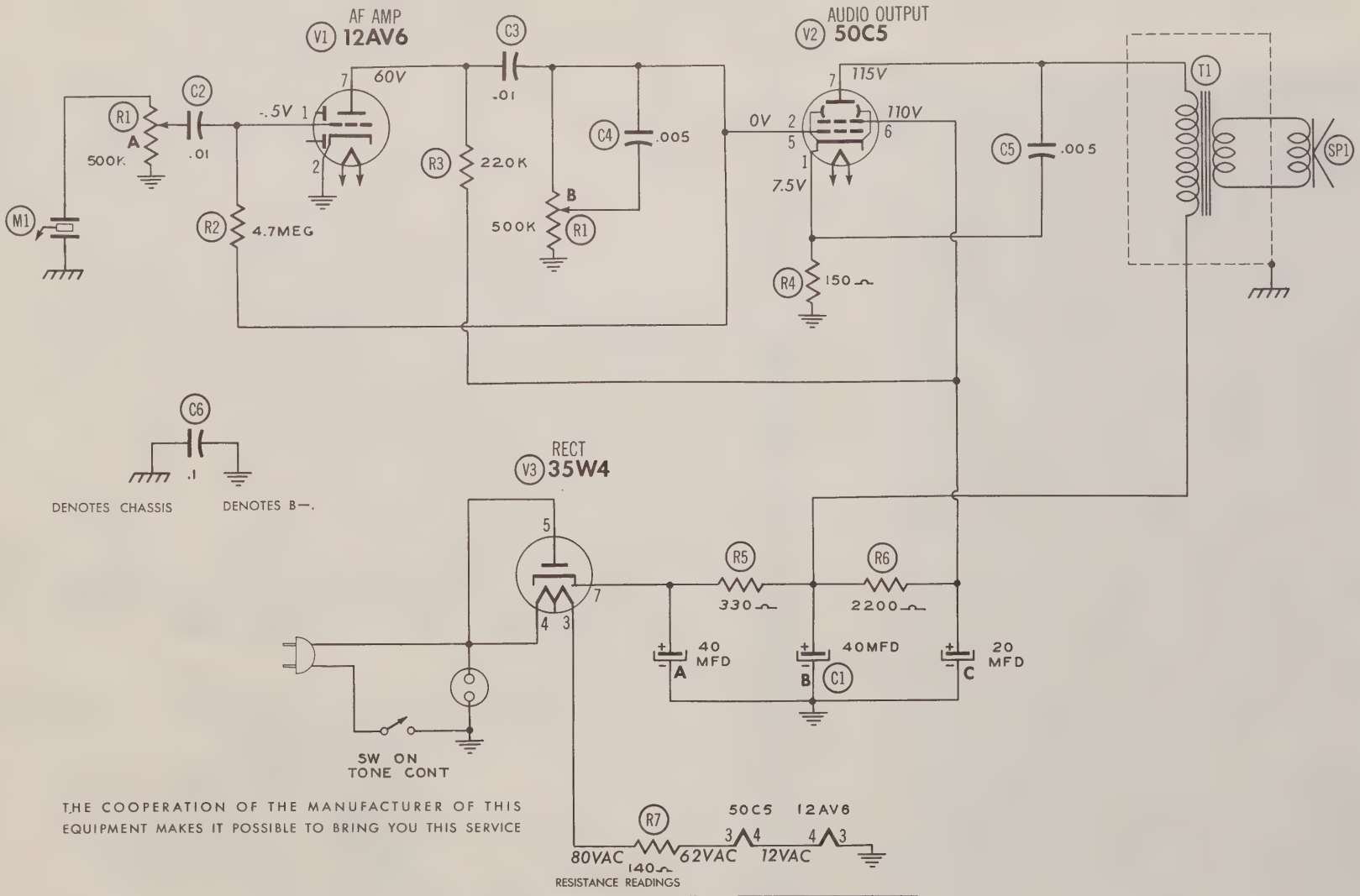
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	STEELMAN PART No.	WALCO PART No.	JENSEN PART No.	
M2		W-30A and W-30MGS	JP-30 and JPS-30LP	

CHASSIS—BOTTOM VIEW



STEELMAN MODEL 487



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12AV6	5.2Meg	0Ω	0Ω	12Ω	INF	INF	†220KΩ
V 2	50C5	150Ω	500KΩ	62Ω	12Ω	500KΩ	†2.3KΩ	†500Ω
V 3	35W4	0Ω	0Ω	202Ω	237Ω	237Ω	219Ω	55KΩ

† MEASURED FROM PIN 7 OF V3.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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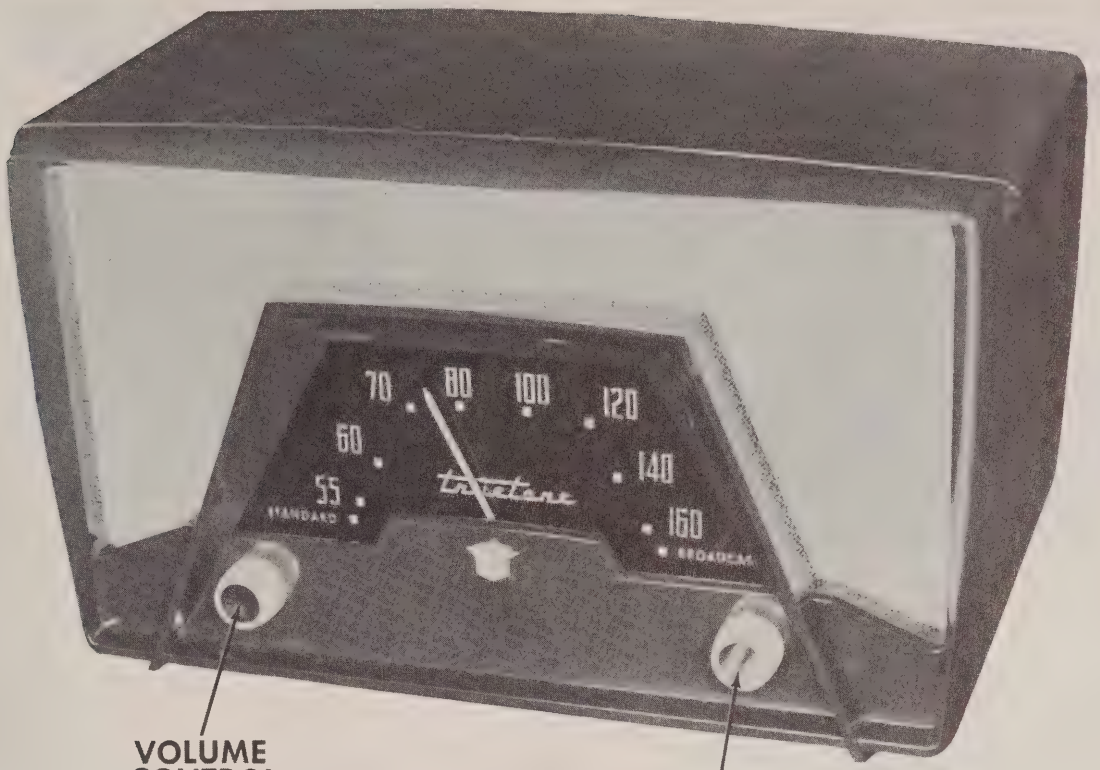
182-14

1. DC voltages measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltages maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

TRUETONE
MODEL D2237A



TRUETONE
MODEL D2237A

TRADE NAME	Truetone Model D2237A
MANUFACTURER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	AC/DC Operated AM Superheterodyne Receiver With Phono Provisions
TUBES (SIX)	Types 12BA6 RF Amp., 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF- Amp., 35C5 Audio Output, 35W4 Rectifier.
POWER SUPPLY	105-125 Volts AC/DC — RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V2) Low side to B-.	455KC (400~Mod)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1620KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate singal into loop of receiver. Adjust for maximum output.
4.	After alignment replace receiver in cabinet, turn tuning gang fully closed and set pointer to last reference mark at low frequency end of dial.						

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	12BA6	12BA6	7BK	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	12BA6	12BA6	7BK	
V4	Det.-AVC-AF Amp.	12AV6	12AV6	7BT	
V5	Audio Output	35C5	35C5	7CV	
V6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■50	150	45X343	AFH3-12		UP5515C		FP311	TVL-3430	
B	▲50	150								
C	20	25								
C2	.001	600	D65102	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C3	20		47X516	SI20		5W5Q2	GP1K-200		5GA-Q2	
C4	47		47X495	SI47N750	TCN-47		N750K-470	NT-5447	5TCU-Q47	
C5	.05	200	B66503	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C6	.05	200	B66503	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C7	.05	200	B66503	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C8	.02	200	B66203	P288-02	DF-203	PJ2S2		PT412	2TM-S2	
C9A	50		†76X1	SI50	†PC-52	TM5Q5	†1403-03	UC-545	†100C3	
B	50			SI50		TM5Q5		UC-545		
C10	.08	200	B66803							
C11	68	500	47X471	1469-00007	D6-680	5W5Q7	GP1K-680	UC-5468	MS-47	
C12	.02	200	B66203	P288-02	DF-203	PJ2S2		PT412	2TM-S2	
C13	.006	600	B66602	P688-006		PTE6D6	GP2-333-602	PT626	6TM-D6	
C14A	.01									
B	250		♦76X5		♦PC-80		♦1404-01		♦102C1	
C										
C15	.01	200	B66103	P488-01	D6-103	PTE4S1	GP2-222-103	PT411	4TM-S1	
C16	.047	400	46X397	489ZGXY-01J		PJ4S47		PT4147	4TM-S47	
C17	.2	200	B66204	P488-22		PTE4P22		TP429	2TM-P22	

† Items C9A, C9B and R9 are combined in one unit.
♦ Items C14A, C14B, C14C, R12A, R12B are conbined in one un it.
When replacing items seperately, C14B and C14C ashould total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	36X372B	Q13-133X	AT-78	BTSK-66-S	UT-430	Volume-Tapped@ 125KΩ
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SW-A	Not Req.	US-26	Attach to R1A

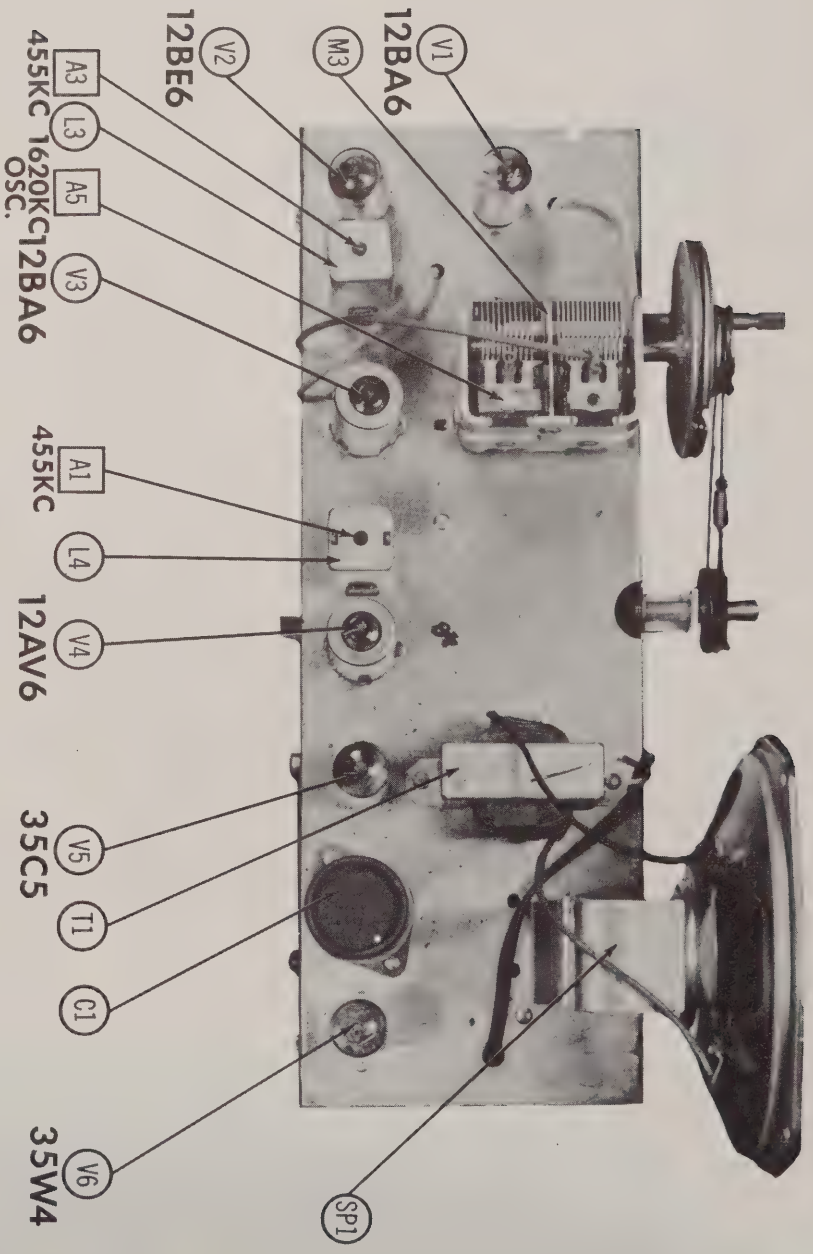
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	NOTES
R2	3300Ω	½	B84332	BTS-3300	
R3	39KΩ	½	B85393	BTS-39K	
R4	100KΩ	½	B85104	BTS-100K	
R5	3300Ω	½	B84332	BTS-3300	
R6	470Ω	½		BTS-470	Note
R7	1000Ω	½	B84102	BTS-1000	
R8	2.2Meg	½	B85225	BTS-2.2Meg	
R9	47KΩ	½	†76X1	BTS-47K	
R10	22KΩ	½	B85223	BTS-22K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	NOTES
R11	10Meg	½	B85106	BTS-10Meg	
R12A	500KΩ	½	♦76X5		
B	500KΩ	½			
R13	180Ω	½	B84181	BTS-180	
R14	820Ω	2	D84821	BTB-820	
R15	27Ω	½	B83270		
R16	39Ω	2	D84390	BW-2-39	
R17	270KΩ	½	B84274	BTS-270K	

Note: Some models use a 1000Ω resistor.
† Items R9, C9A, C9B are combined in one unit.
♦ Items R12A, R12B, C14A, C14B, C14C are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		TRUETONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.4KΩ	2.8Ω	285Ω	.9Ω	51X148	A-3876 ①	A-3025 ①	RO-2 ①	S-1X ①	① Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	2.8Ω	12A508A	ST470 Mod P5-X	5A07	

COILS (RF-IF)

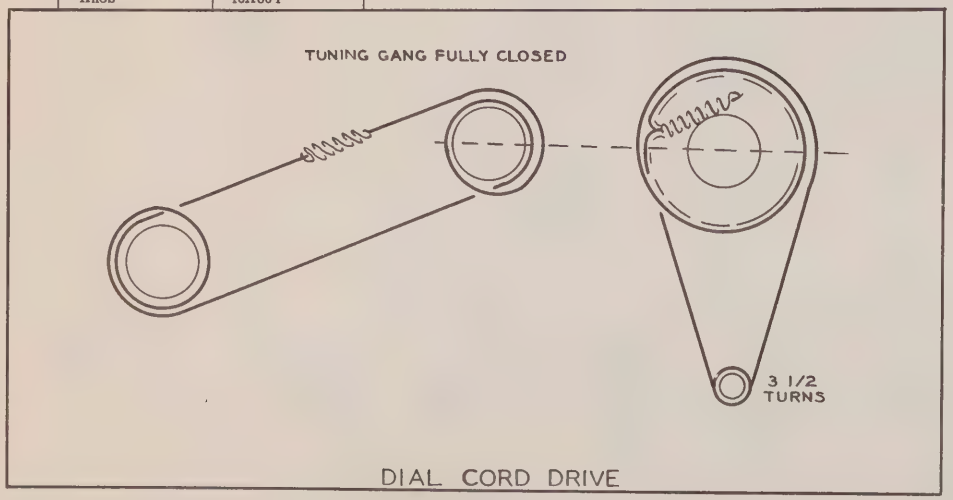
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	TRUETONE PART No.	MERIT PART No.	
L1	Loop Ant.	0Ω	1.2Ω	9A2258		
L2	Osc. Coil	.3Ω	5.7Ω	9A2101		
L3	Input IF	13Ω	11Ω	9A2108	BC-352	
L4	Output IF	18Ω	18Ω	9A2109	BC-353	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					TRUETONE PART No.		
M1	Bayonet	6-8	.15	Brown	7A103		Type No. #47

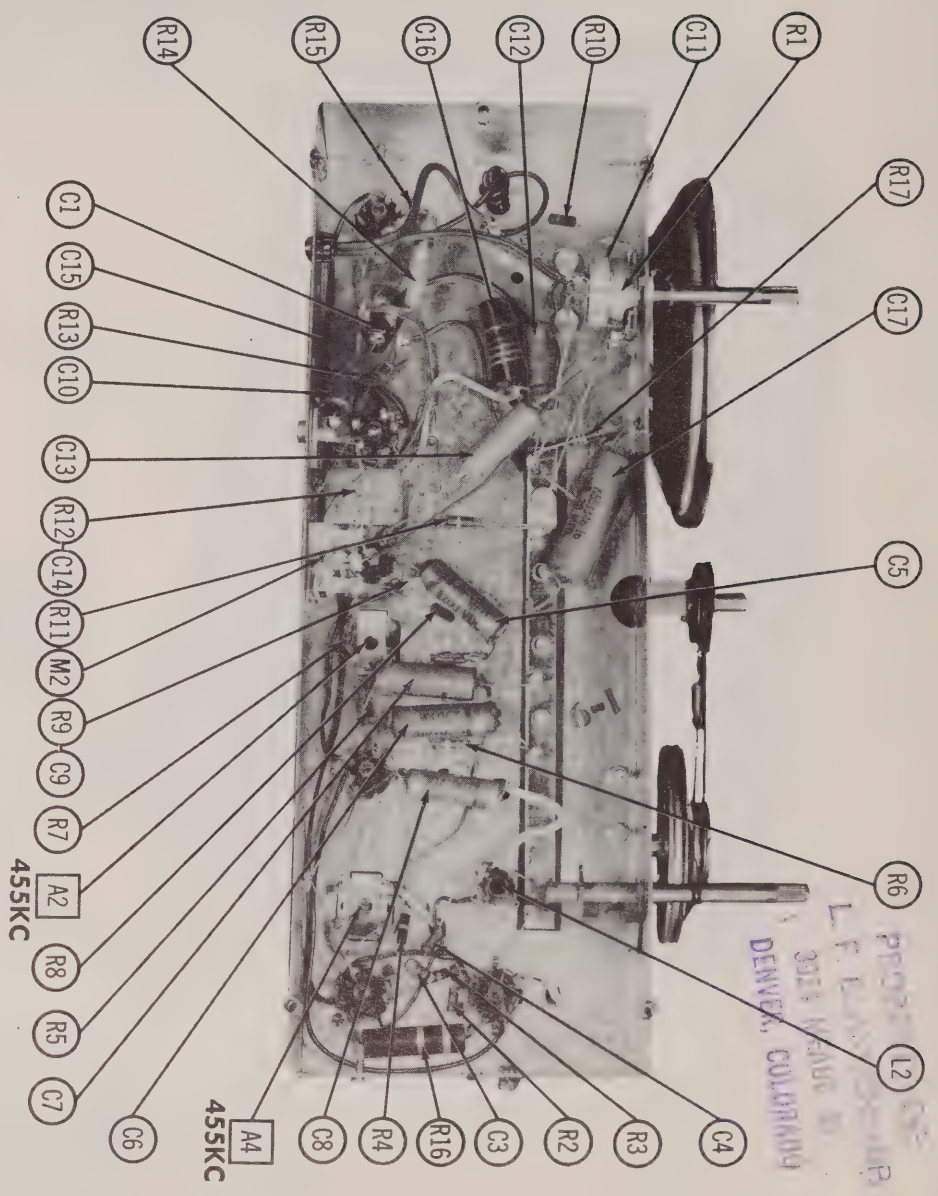
MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M2	Switch	2A402	Radio-Phono
M3	2 Gang Var. Cap.	14A218	(26-472MMF, 23-187MMF)
A6	Trimmer	17A256	Ant. Adj. (2-24MMF)
	Cabinet	55X422	
	Dial Scale	58X755	
	Pointer	15X263	
	Knob	10A804	



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



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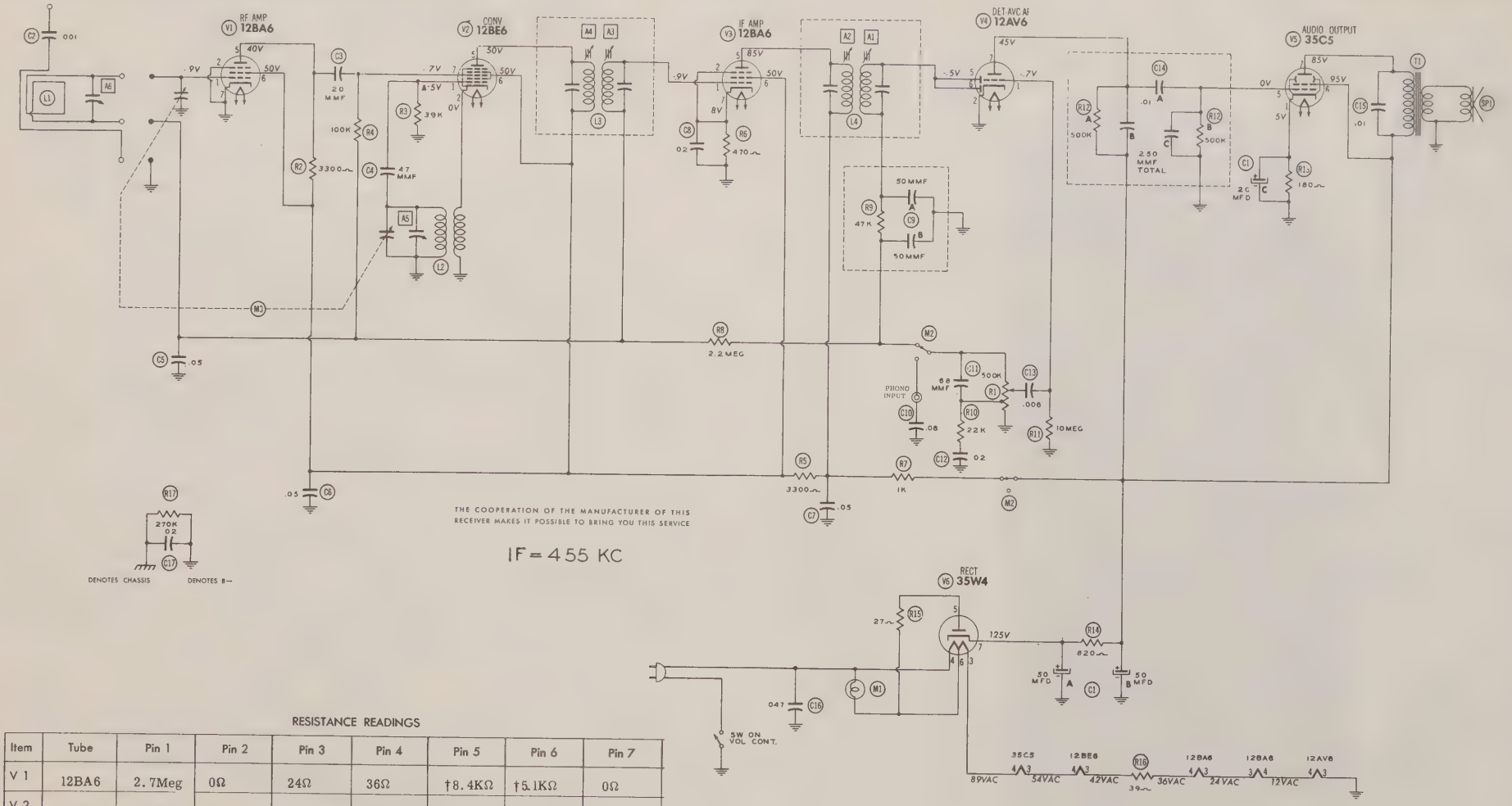
3937 W. 46th
DENVER, COLORADO

TRUETONE MODEL D2237A



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BA6	2.7Meg	0Ω	24Ω	36Ω	†8.4KΩ	†5.1KΩ	0Ω
V 2	12BE6	39KΩ	.3Ω	75Ω	87Ω	†5.1KΩ	†5.1KΩ	2.8Meg
V 3	12BA6	2.7Meg	470Ω	24Ω	12Ω	†1.8KΩ	†5.1KΩ	470Ω
V 4	12AV6	10Meg	0Ω	0Ω	12Ω	550KΩ	55KΩ	†500KΩ
V 5	35C5	180Ω	500KΩ	87Ω	122Ω	500KΩ	†820Ω	†1.1KΩ
V 6	35W4	INF	INF	122Ω	157Ω	184Ω	139Ω	40KΩ

† TAKEN FROM PIN 7 OF V6.
▲ TAKEN WITH VACUUM TUBE VOLTMETER.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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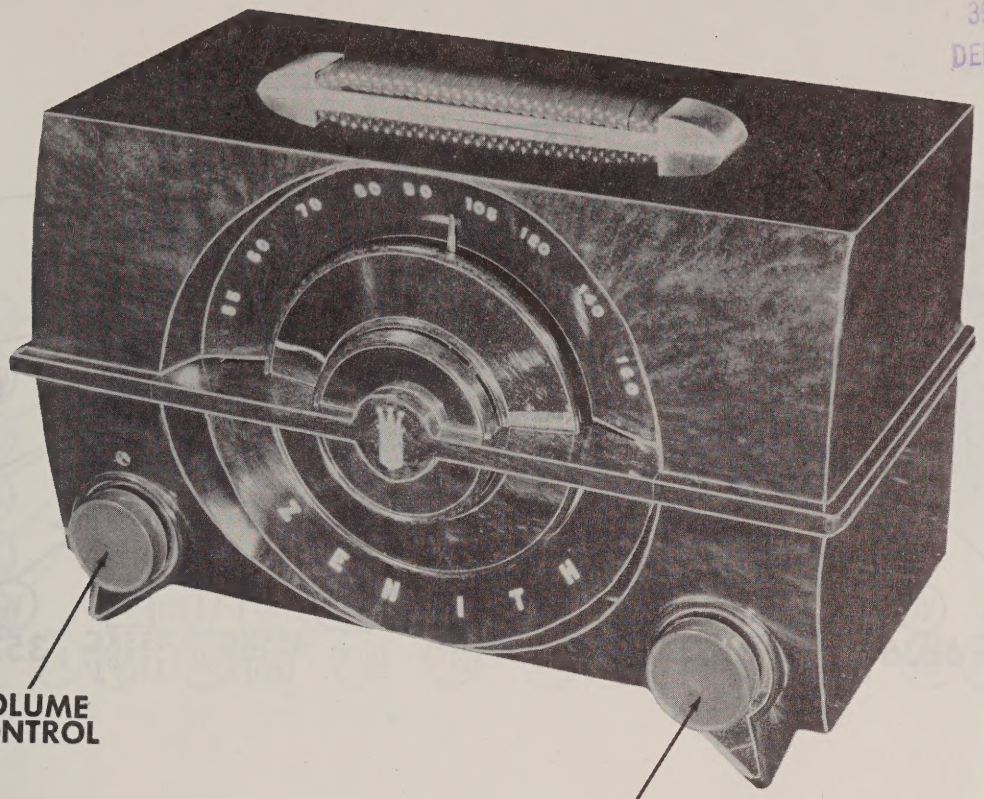
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

L. F. BANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ZENITH
MODELS J615, F, G, W, Y (Ch. 6J05)



ZENITH
MODELS J615, F, G, W, Y (Ch. 6J05)

TRADE NAME	Zenith Model J615, F, G, W, Y (Ch. 6J05)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver with Phono Provisions
TUBES (Six)	Types 6BJ6 RF Amp., 12BE6 Conv., 6BJ6 IF Amp., 12AT6 Det.-AVC-AF Amp., 35L6GT Audio Output, 35W4 (or) 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC/DC — RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1620 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.5MFD	High side to pin 7 (grid) of 12BE6 (V2) Low side to B-.	455 KC (400~Mod)	Near 600 KC	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620 KC	Tuning gang fully open	"	A5	"
3.		"	1400 KC	Tune to 1400 KC signal	"	A6, A7	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6BJ6	6BJ6	7CM	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	6BJ6	6BJ6	7CM	
V4	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V5	Audio Output	35L6GT	35L6GT	7AC	
V6A	Rectifier	35W4	35W4	5BQ	
B	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■80	150	22-1808	AFH3-10		UP8415		FP216	TVL-3440	
B	▲40	150								
C2	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C4	.05	200	22-178	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C5A										Note 1
B										Note 1
C										Note 1
C6	.01	400	22-1182	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C7	.05	400	22-1017	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C8	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	

Note 1. Some Models combine C5A, C5B, C5C in one unit (Part #105-14)
Some Models combine C5A, C5B, C5C, R12, R13 in one unit (Part #105-28)
Some Models use single units in this application.
C5A is .01MFD (Part #22-3)
C5B is .0005MFD (Part #22-854)
C5C is .005MFD (Part #22-448)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	63-2786	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	NOTES
R2	330Ω	1/2	63-1765	BTS-330	
R3	10KΩ	1/2	63-1828	BTS-10K	
R4	1000Ω	1/2	63-1786		
R5	22KΩ	1/2	63-1842	BTS-22K	
R6	100Ω	1/2	63-1744	BTS-100	
R7	2.2Meg	1/2	63-1926	BTS-2.2Meg	
R8	1Meg	1/2	63-1912	BTS-1Meg	
R9	4700Ω	1/2	63-1814	BTS-4700	

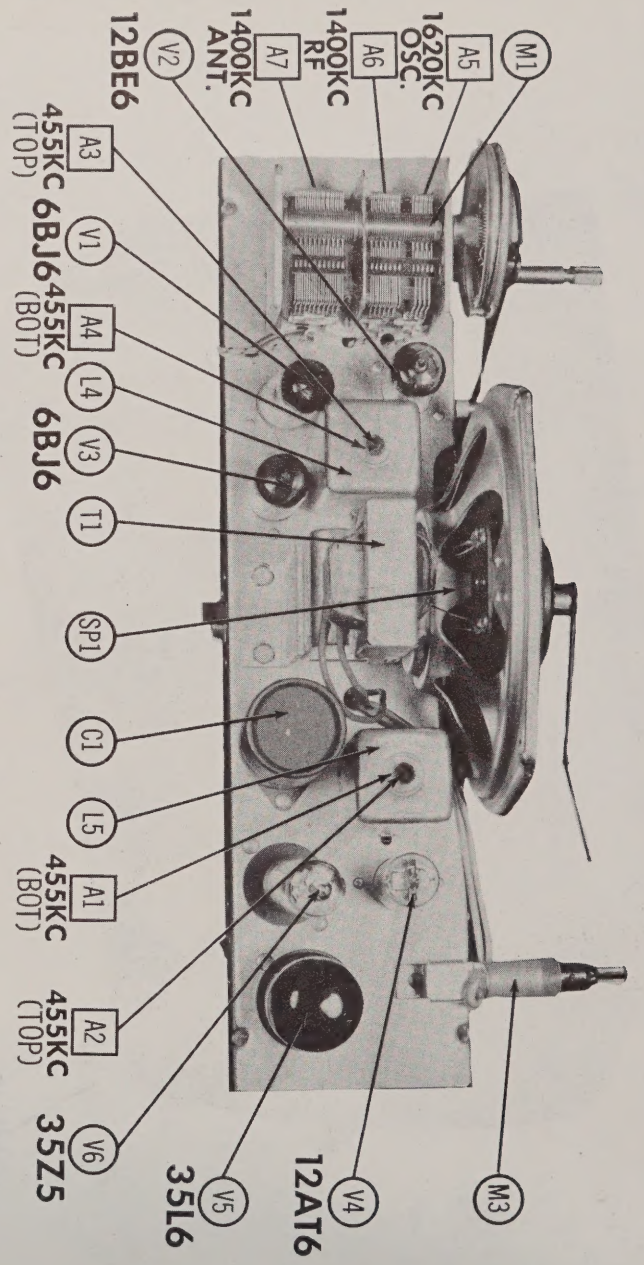
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	NOTES
R10	2200Ω	½	63-1800	BTS-2200	
R11	4.7Meg	½	63-1940	BTS-4.7Meg	
R12	470KΩ	½	63-1898	BTS-470K	Note
R13	470KΩ	½	63-1898	BTS-470K	Note
R14	150Ω	1	63-1977	BTA-150	
R15	1000Ω	1	63-1574	BTA-1000	
R16	22Ω	½	63-1219		
R17	*	*	63-2797		

Note: Some Models combine R12, R13, C5A, C5B, C5C in one unit. (Part #105-28)
* Special temperature compensating resistor (14Ω hot, 100Ω cold)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	3.1KΩ	3.1Ω	260Ω	.6Ω	206C643	A-3877 ①	A-3026 ①	RO-303 ①	S-4X ①	① Bend mtg tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5 1/4"	PM	3.1Ω	D-49CZ643	ST-803 Mod. P-255-V	52A1	

COILS (RF-IF)

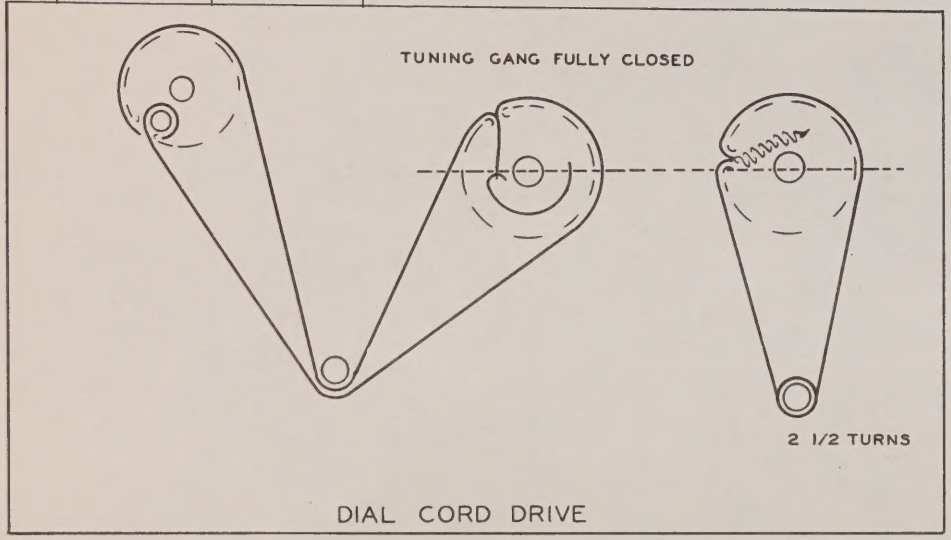
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	ZENITH PART No.	MERIT PART No.	
L1	Loop Ant.	3.7Ω		S-18656		* Use mtg. plate
L2	RF Coil	3.6Ω	1Ω	S-14832		
L3	Osc. Coil	.8Ω	9.5Ω	S-14833		
L4	Input IF	22Ω	22Ω	95-1101	BC-352 *	
L5	Output IF	22Ω	22Ω	95-1102	BC-355 *	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					ZENITH PART No.		
M1	Bayonet	6-8	.15	Brown	100-67		Type #47

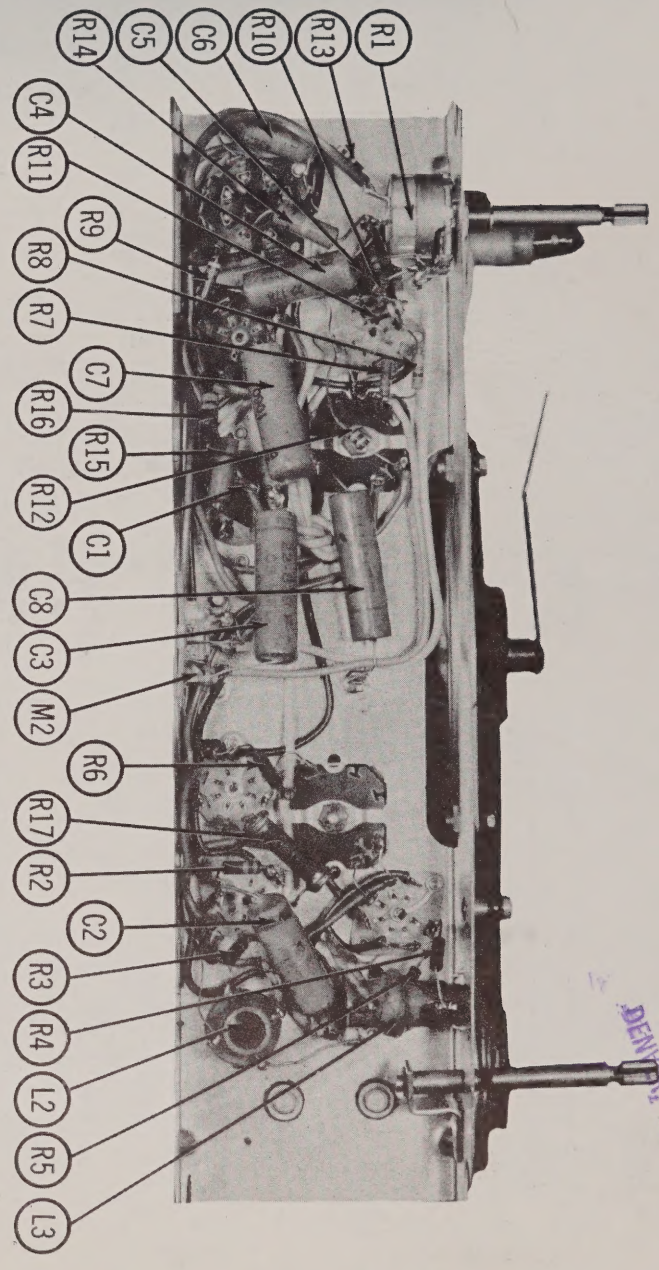
MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	Switch	85-495	Radio-Phono
M3	3 Gang Var. Cap.	22-1805	(17-352MMF, 15-222MMF, 14-84MMF)
	Cabinet	14-1386	Black - Model J615Y
	Cabinet	14-1390	Walnut - Model J615
	Cabinet	14-1427	White -Model J615W
	Cabinet	14-1428	Grey - Model J615G
	Cabinet	14-1429	Green - Model J615F
	Knobs	46-944	2 Used - Model J615Y
	Knobs	46-955	2 Used - Model J615
	Knobs	46-981	2 Used - Model J615W
	Knobs	46-982	2 Used - Model J615G
	Knobs	46-983	2 Used - Model J615F
	Pointer	S-18652	



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



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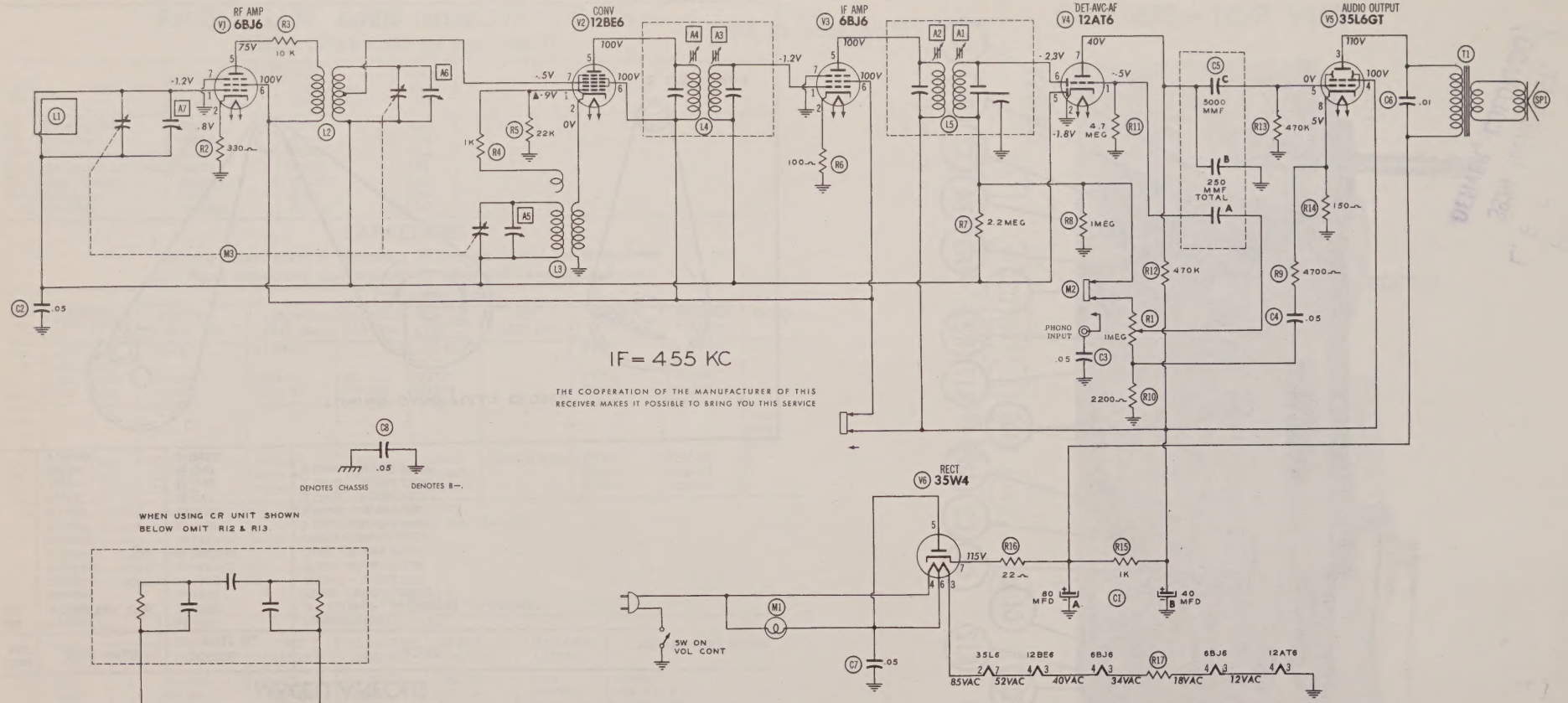
ZENITH
MODEL J615, F, G, W, Y, (Ch. 6105)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BJ6	2.7Meg	330Ω	118Ω	124Ω	†11KΩ	†1KΩ	0Ω	
V 2	12BE6	22KΩ	.8Ω	124Ω	136Ω	†1KΩ	†1KΩ	2.7Meg	
V 3	6BJ6	2.7Meg	100Ω	12Ω	18Ω	†1KΩ	†1KΩ	0Ω	
V 4	12AT6	4.7Meg	0Ω	0Ω	12Ω	2.7Meg	500KΩ	†470KΩ	
V 5	35L6GT	INF	171Ω	†282Ω	†1KΩ	470KΩ	†22Ω	136Ω	150Ω
V 6	35W4	4.8KΩ	INF	171Ω	206Ω	198Ω	198Ω	90KΩ	

ALL MEASUREMENTS TAKEN IN RADIO POSITION
† MEASURED FROM PIN 7 OF V6
▲ TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.